ENGINEERING NEWS-RECORD

School fires: What must be done? p.21

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331,500 barrels of fuel oil and marine diesel oil are stored in four Horton® cone-roof tanks at Stanvac terminal. CB&I also installed a water storage tank, piping, manifolding, pumps, as well as loading and unloading facilities. This facility gives Aden a third bunkering terminal—to make Aden one of the world's largest and busiest ports.

Firm of Sir Bruce White, Wolf Barry & Partners, London, were engineering consultants.

Where there's petroleum and the need for petroleum storage or process equipment . . . you'll find CB&I.

Off the tip of Aden Peninsula, where Suez Canal shipping starts its voyage to the Far East, CB&I played an important role in the construction of this million dollar bunkering terminal for Stanvac.

An unusual installation yes, but a good example of how CB&I's expertly coordinated services can be made available to meet the most *specific* set of requirements. CB&I's *global representation* serves a world of petroleum with the advantage of *one* source and *one* responsibility for services including design, engineering, fabrication and erection of steel tanks and processing structures . . . for erection *anywhere.*

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100% MURPHY DIESEL

Plant at Springfield, Tenn. . . . . 100% MURPHY POWERED

Plant at Oneonta, Alabama . . . . . 100% MURPHY POWERED

Owner Porter Brown and Superintendent William Boring . . 100% SOLD ON MURPHY DIESEL

Here's why Porter Brown Limestone Company, of Springfield, Tenn., *specifies* Murphy Diesel power when they buy crushing equipment—

"*In view of Murphy's good service at our other plants, we specified Murphy power when we bought equipment for our Oneonta plant. Murphys are satisfactory in every way . . . especially for low operating costs and less maintenance. We're sold 100% on Murphy Diesel.*"

Porter Brown's plant at Oneonta (shown below) is averaging 1500 tons per day of 1¼" minus limestone. A 161 HP (continuous) Murphy Diesel powers the jaw crusher and vibrating grizzly in the portable primary, another 161 HP Murphy powers the cone crusher intermediate scalping unit, while a 107 KW Murphy Diesel-Electric Generator Set meets the electrical requirements of the plant.

Aggregate producers and contractors throughout the country are swinging to dependable, economical Murphy Diesels for both portable and stationary plant operations.

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For stationary installations, Murphy's steady, uniform power and low fuel costs assure efficient power for crushers, screens, conveyors, washing equipment, etc. And don't overlook the economy advantages of Murphy Diesels for generators, pumps, compressors, or for powering or re-powering shovels. 408N

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HEAVY-DUTY POWER for Construction

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How to Pour a Tunnel in a Hurry...

Symons Culvert Forms The Answer

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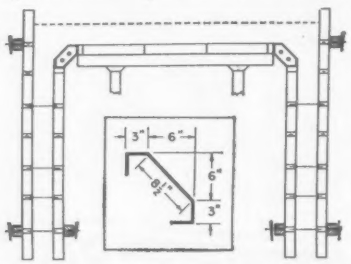
Symons Culvert Forms solved the problem. They eliminated the need for any special form or job-built construction.



Schweiger used Symons 1" steel channel filler horizontally on top of 6' vertical panels on the inside of the walls. Culvert Forms were placed on top of this filler. The forms underneath were stripped with no difficulty and the fillers and culvert forms were then removed without disturbing the decking for the slab, which was left in place for an additional curing period. Walls and top slab were poured monolithically in three pours. *Job was completed in three weeks.*

Symons forms, shores and column clamps may be rented with purchase option. Additional information on *Symons Culvert Forms* is available upon request.

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EIGHTY-FIFTH YEAR OF PUBLICATION

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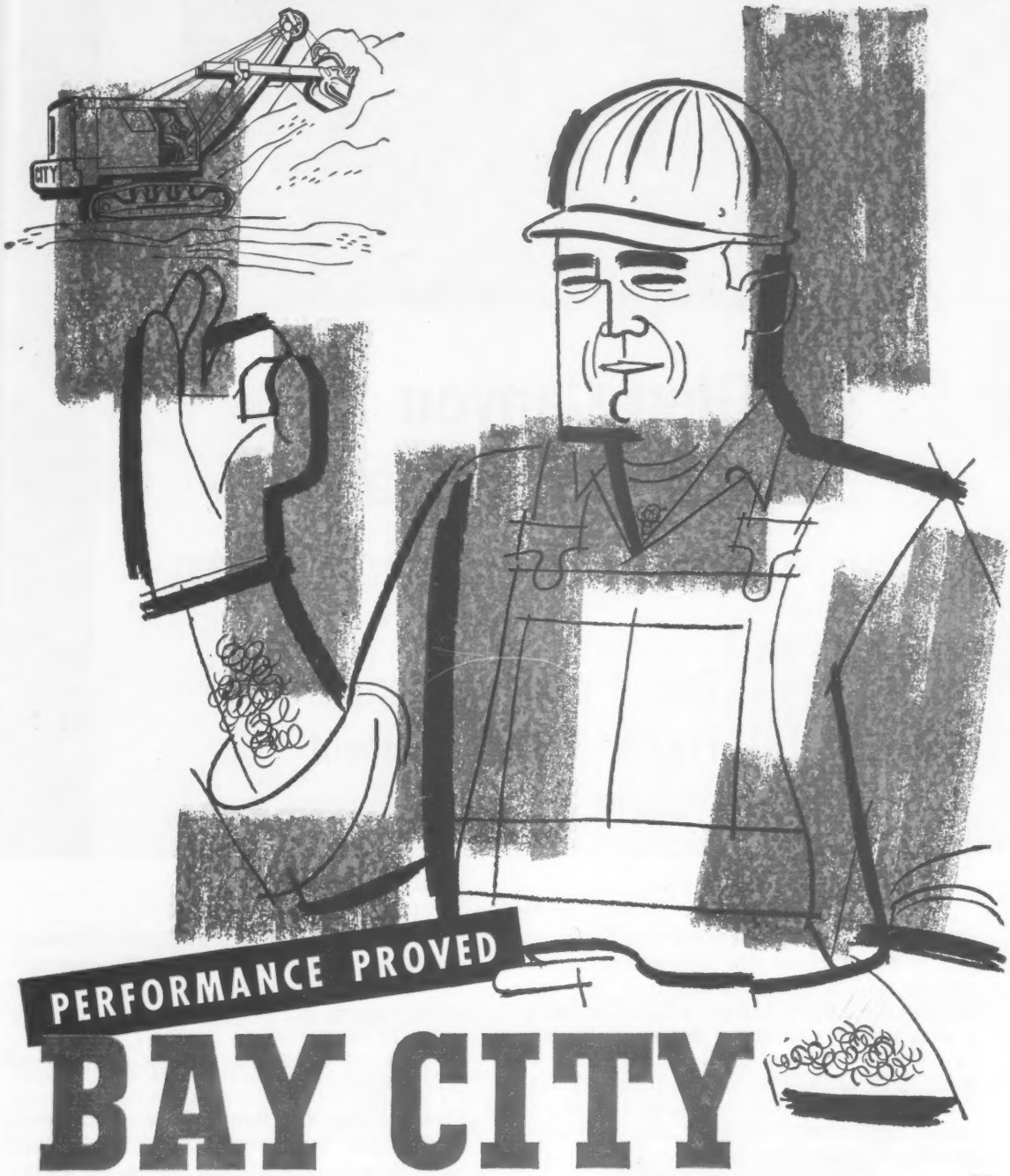
real rugged machinery!



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BAY CITY

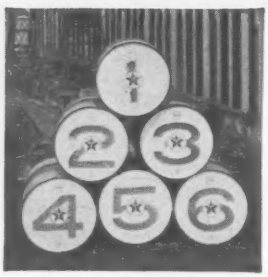
276

THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN, U.S.A.

SECOND LARGEST DAM IN THE U. S., at Glen Canyon, Ariz., will incorporate two of these 2,800 ft. diversion tunnels. Frazier-Davis equipment runs dependably, stays on the job, thanks to the Texaco Simplified Lubrication Plan.

Glen Canyon tunnel borings nearing completion with Texaco Plan



Only 6 lubes needed to keep Frazier-Davis equipment working dependably

This is Frazier-Davis Construction Company's job: to bore the east side diversion and service tunnels, with a combined length of 2½ miles, through the walls of Arizona's Glen Canyon. It's a vital project, part of the Bureau of Reclamation's $760 million development of 10,000 square miles of arid land. On a job as big as the Glen Canyon Dam, on-time completion of every phase is absolutely essential. And that puts a priority on dependable equipment performance.

The Texaco Plan keeps equipment on the job—at lowest cost—by handling all major lubricating problems with no more than six products. A combination of specialized and multi-purpose lubricants assures proper lubrication for each machine, with lower lubricant inventory and less chance for mistakes. For Frazier-Davis, the Texaco Simplified Lubrication Plan has proved to be one of the most economical and dependable ways to get top performance from every piece of equipment.

Here are the lubricants Texaco recommended for Frazier-Davis:

Texaco Ursa Oil Heavy Duty—keeps engines clean, rings free, valves properly seated for full power.

Texaco Regal Oil R&O—prevents formation of rust and harmful deposits in compressor systems.

Texaco Universal Gear Lubricant EP—keeps differentials and transmissions running smoothly at low cost.

Bureau of Reclamation photos

Texaco Marfak Multi-Purpose 2—protects wheel bearings, chassis, water pumps against dust, moisture and wear.

Texaco Track Roll Lubricant—prolongs the life of crawler mechanisms.

Texaco Rock Drill Lubricant—guards against wear and rust whether drills are running or idle.

Ask a Texaco Lubrication Engineer to help you simplify your lubrication problems and reduce costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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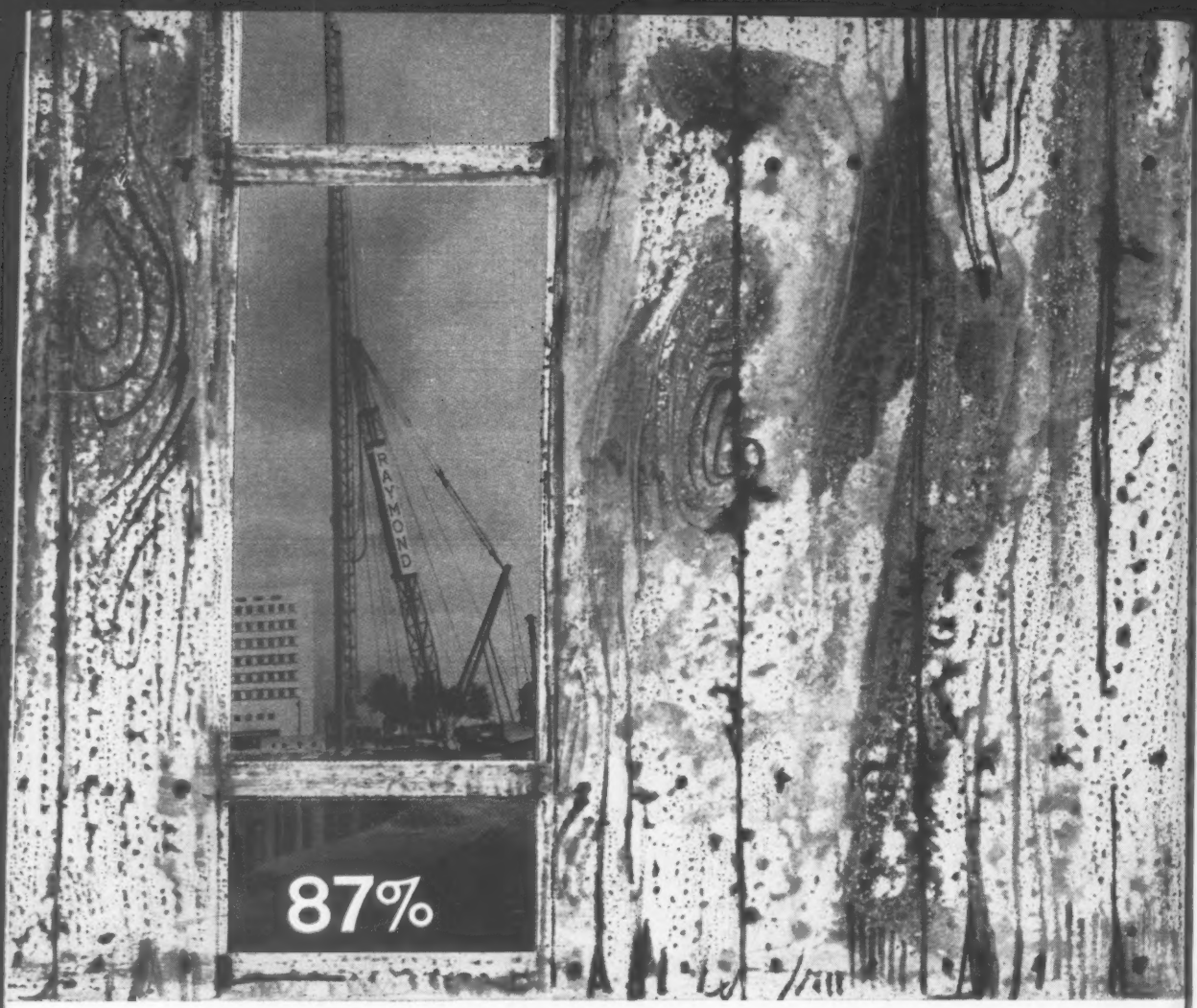
(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)



of this nation's leading contractors have used

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New SUPER HARD ROCK LUG

Tubeless or Tube-Type

This new SUPER HARD ROCK LUG is *truly* wide-base, from tread—to shoulder—to bead!

BONUS RUBBER—and plenty of it—*right where you need it most.* Result? *Super* traction, *super* flotation, *super* stability—and *super* resistance to shoulder snags and cuts.

Best news of all: *SUPER HARD ROCK LUG costs no more than conventional wide-base off-roaders!* Get more tire for your money! Get this great new wide-base yardage champ at your Goodyear dealer's now.

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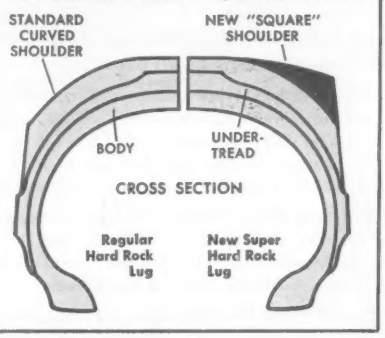
SEE HOW DEEPER SHOULDER DEPTH PROVIDES STRONGER BITE, LONGER WEAR:



Built with **TRIPLE-TOUGH 3-T NYLON CORD!**

Like steel, tire cord must be tempered to be tough. Goodyear's exclusive 3-T process, involving Tension, Temperature and Time, triple-tempers cord to make it TRIPLE-TOUGH—to give you longest tire life, lowest cost-per-yard!

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

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Two new low-cost Barber-Greene ditchers

with advanced features not available on even the most expensive ditchers

All these advantages — offered only by Barber-Greene — mean more ditch per day

- **New Dual-Range Hydra-Crowd Transmission** provides infinitely variable crowding speeds independent of wheel and conveyor drives. No stopping to change speeds . . . no gear shifting. Instant selection of maximum crowding speeds for every digging condition.
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- **New Flexible Drawbar** between chassis and boom reduces transfer of twist and tilt from wheel to chassis when digging around curves or over uneven ground. This design reduces chain length and eliminates idler sprockets.
- **New Crawlers** are easily adjusted in one-tenth the time of ordinary crawlers. Constant tension is provided by predetermined spring loading . . . crawlers quickly loosened or tightened without changing spring tension.
- **Other Features Include:** automatic overload protection, new hydraulic brakes, new hydraulic wheel hoist.

58-42-D

Write for information on the ditcher line of advanced design.

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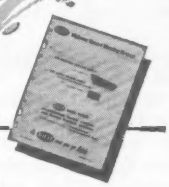
Use Dietz Flare Torches to show what the hazard is.

ADEQUATE LIGHTING may save you thousands in tragedies, bad publicity and law suits. Write for our latest authoritative manual on Hazard Warning Lighting. It's free. R. E. Dietz Co., 114 Leavenworth Ave., Syracuse, N. Y.



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Please send me a copy of the "Hazard Warning Lighting" manual.

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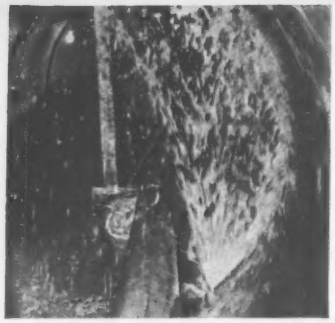
Go DIETZ and you go Safely



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In tunnels, dams, deep basements and similar structures, Sika No. 2 will choke off tons of water under extreme pressure. It is a red liquid that, when mixed with portland cement, causes mortar to set within 15 to 30 seconds. Sealing is accomplished from the inside without the necessity of relieving pressure.

Moderate pressure leaks are sealed with Sika No. 4A. Mortar made by mixing this clear liquid with cement, will set within 45 to 60 seconds sealing seepage quickly and firmly.

Sika Quicksets produce an adhesive mortar that does not dilute or wash away. Very little heat is produced during hardening. Plugging is fast and dependable, thus saving both time and money.

For complete information on Sika Quicksets, write for Bulletin QS-57.

26-23

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Reader Comment

Dams and Atomic Bombs

SIR—ENR Dec. 4, 1958, p. 24 reports that it has been decided to make the Oroville Dam in California an earthfill structure, 730 ft high!

ENR Dec. 11, 1958, p. 128 editorializes on the proposal to create an Alaska harbor with a single atomic bomb.

One warm spring morning, when the Copper River Railroad was abuilding to the fabulous Kennicott copper mine the writer was setting up his transit at the top of a V-shaped ravine, perhaps 200 ft wide and 50 ft deep, on the mountainside near M.P. 126, when a startling thing happened. Came a sudden roar and down the ravine hurtled a great gob or mass of water of about 20 ft maximum depth, that swept by in an instant and then fanned out for hundreds of feet across the ice of the still frozen Copper River! A snow dam across the ravine somewhere up the slope had broken and this was the consequence. Since I had been set up on a hub in the very bottom of the ravine not over three minutes earlier, my impressions of the incident were undoubtedly more serious than otherwise they would have been.

"I would not for a moment question the safety and security of an earthfill dam 730 ft high so far as normal peacetime conditions are concerned; so far as wartime conditions are concerned, I do question it. In war the object is to devastate the enemy. Perhaps this can best be done by bombing the great cities themselves. But certainly an atomic bomb of Alaska harbor variety striking near the top of an Oroville earthfill dam would do no mean amount of damage. Once establish flow across the top of an earthfill dam and it erodes with such ever-increasing rapidity through a channel of such ever-expanding size that the dam may be said to dissolve and release the entire reservoir of stored water almost at once! Everything in the valley below the dam would be destroyed and far on either side in both the Sacramento and San Joaquin valleys, and where they drain out through Carquinez Straits everything would be destroyed.

The fact of truly transcendant importance respecting a concrete gravity dam whose crest may be badly notched by an atomic bomb is this: the rest of the dam *will not dissolve.*" The reservoir will drain through the notch and to the bottom of the notch and there will be great destruction below, but nothing so vast and catastrophic as a breached earthfill dam assures.

I note that 'the concrete gravity alternate was way off in cost.' I can easily credit that statement assuming it would be built with its entire volume made of watertight concrete as we have conventionally built such dams in this country for many past years. But why continue to build them that way? Why not as far as possible copy the wide open, free construction methods of earthfill dams and forget the block jointing, the 5-ft lifts, the clean-up of horizontal joints, the circulation of cold water through embedded piping, the chilling of aggregates and perhaps the manufacture of ice for use in mixtures, the final grouting and all the costly processes that can only find justification in thin arch or slab dams. Why in gravity dam can't we build them of generous sections, but of concrete of as low cement content as possible, with aggregates divided into only a few sizes, grinding out dry concrete through great batteries of mixers, hauling it in great trucks and carryalls, and spreading it and vibrating it into place with bulldozers? Then do the waterstopping and weatherproofing at the surfaces only instead of through the entire body of the dam.

Rockfill dams serve successfully with steel plate waterstopping on their upstream faces. So could a concrete-fill dam be waterstopped. A leaky concrete dam in Norway has been waterstopped with the application of a sound, rich, reinforced slab to its upstream face. So could a concrete-fill dam be waterstopped. To weatherproof the downstream face of a concrete-fill dam would overtax no one's abilities or imagination.

Finally, however, is produced a dam that does not dissolve if its crest is breached, whose safety is immeasurably greater than that of one that does dissolve." How its cost compares with that of the great earthfill dam shown in your

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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Now you can buy a ¾ yard Lorain-26 with everything you want in it but no more than you need. You select the "package" you want—whether dragline, clamshell, shovel, crane or hoe, and you'll get the properly balanced machine to do your job best.

You buy only what will pay off for you . . . without unneeded extras that can boost initial cost and don't necessarily make any more money for you.

And you'll be amazed at the lower prices your Lorain distributor can quote you. Check and compare what he has to offer you on this ¾ yard workhorse. You'll find you'll get more —and pay less. See him today.

LOW COST DIGGING PACKAGE
A heavy duty shovel-hoe without excess weight on a digging crawler. Shovel boom is all-welded, with cable crowd, power dipper trip. Welded gooseneck tapered hoe boom. Power plant, clutch and hoist shafts contribute to counterweight effect. **And the price is right.**

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Lorain's exclusive Square-Tubular-Chord Boom is lighter, stronger, permits greater payloads. Big crawler, simultaneous hoist, swing and travel available. Hydra-Ease crawler controls. All control linkage mounted on anti-friction bearings. **And the price is right.**

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NORTHWEST

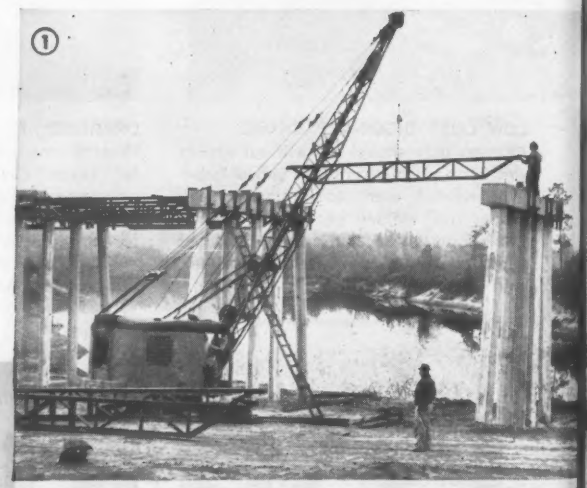
MODEL 25

NORTHWEST

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES
⅜ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity

PULLSHOVELS	TRUCK CRANES
⅝ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity



① A new 25-D handling steel on a Southern bridge job.

② Another of the many 25-D Pullshovels now in service.

③ The 25-D is fast and smooth on clamshell work.

Again—

A STILL FINER 3/4 YARD MACHINE

25-D

In keeping with Northwest's program of constant refinement Northwest announces a still finer tool —the 25-D, an advanced ¾-yd. machine as a Shovel, Crane, Dragline or Pullshovel supplemented by the Northwest 25-D, 18-ton Lifting Crane. This Northwest will make many new features available.

- New Independent High Speed Worm Boom Hoist
- True power load lowering
- Longer, wider crawlers
- Larger Drums—greater cable capacity
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These are just a part of the new advances in the design of this workhorse of the ¾-yd. field that you can add to the many exclusive features always available on Northwest machines.

Don't buy a ¾-yd. machine without getting the whole story on the 25-D.

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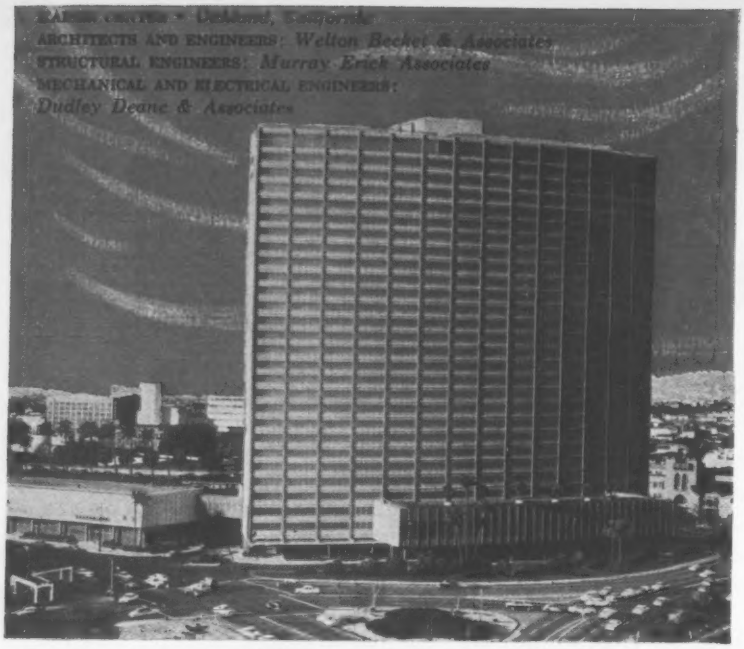
④

③

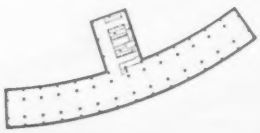
④ On those rock jobs the 25-D means even greater output.

ASK for complete details on this still finer NORTHWEST!


ARCHITECTS AND ENGINEERS: Welton Becket & Associates
STRUCTURAL ENGINEERS: Murray Erick Associates
MECHANICAL AND ELECTRICAL ENGINEERS:
Dudley Deane & Associates

Floor areas electrified in the West's largest office building

Milcor Celluflor anticipates tomorrow's electrical load in new Kaiser Center



Here, to provide unlimited electrification at low cost — and meet the challenging construction requirements of a fan-shaped floor layout — the architect has combined four types of Milcor Celluflor panels.

The underfloor cells serve as raceways to handle the complex cable systems required by communications systems and electronic office equipment in this 28-story building. And—there's electrical capacity to spare!

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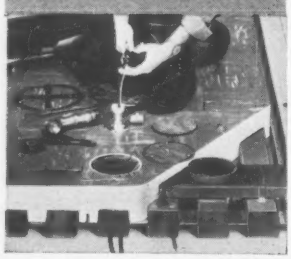
Electrical header duct carries feeder circuits across Celluflor cells. In a few minutes, new outlets can be installed only inches from any location on the floor.



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C-16

. . . Reader Comment

section the writer does not know, but the excess cost, if any, can be paid as insurance that is well worthwhile. A breached earthfill dam would dissolve; a breached concrete-fill dam would not.

It is not at all unlikely that atomic bombing has already been considered by those in authority, but if so the writer would question the conclusions reached.

HOMER M. HADLEY
Consulting Engineer
Seattle, Wash.

Dollars and Cents

SIR—With reference to the article entitled "Contractor Retains the Architect" (ENR Dec. 25, 1958), the cost per cubic foot should, of course, read 29.59 cent not 29.59 dollars as you indicated in the picture caption and in the article. We assume that your readers were able to make this obvious correction mentally when they read the article.

ROBERT F. BORG
General Manager
Kreisler-Borg Construction Co.

For Your Calendar . . .

Associated Equipment Distributors, Hotel Conrad Hilton, Chicago, Ill., Jan. 25-29.
Association of Asphalt Paving Technologists, Brown Palace, Denver, Colo., Jan. 26-28.
American Society of Heating and Air Conditioning Engineers, Convention Hall, Philadelphia, Pa., Jan. 26-29.
National Crushed Stone Association, Americana Hotel, Miami Beach, Fla., Jan. 26-30.
National Plant Maintenance and Engineering Conference, Public Auditorium, Cleveland, Ohio, Jan. 26-28.
Society of Plastics Engineers, 15th annual technical conference, Hotel Commodore, New York City, Jan. 27-29.
20th Annual Convention of the Private Truck Council of America, Inc., Sherman Hotel, Chicago, Ill., Jan. 29-30.
National Bituminous Concrete Association, 4th annual meeting, Americana Hotel, Miami Beach, Fla., Feb. 2-6.
American Society of Civil Engineers, Hotel Statler, Los Angeles, Calif., Feb. 8-13.
Mason Contractors Association of America, ninth annual convention and 1959 show, Chase-Park Plaza Hotel, St. Louis, Mo., Feb. 15-18.
National Ready Mixed Concrete Association, Roosevelt Hotel, New Orleans, La., Feb. 15-19.
National Society of Professional Engineers, Dinkler-Tutwiler Hotel, Birmingham, Ala., Feb. 18-21.
American Concrete Institute, Statler Hilton Hotel, Los Angeles, Calif., Feb. 23-26.
National Council for Stream Improvement, Waldorf-Astoria, Astor Gallery, New York City, Feb. 23-25.
Second Annual Building Congress on Urban Renewal, National Housing Center, Washington, D. C., Feb. 26.
32nd Highway Engineering Conference, University of Colorado, Boulder, Colo., Mar. 5-6.
American Railway Engineering Association, Sherman Hotel, Chicago, Ill., Mar. 9-11.
9th Annual Iron and Steel Conference, Pick-Roosevelt Hotel, Pittsburgh, Pa., Mar. 11-12.
American Society of Mechanical Engineers, Franklin Institute, Philadelphia, Pa., Mar. 16-17.
American Society for Public Administration, Statler-Hilton, Washington, D. C., Mar. 16-18.

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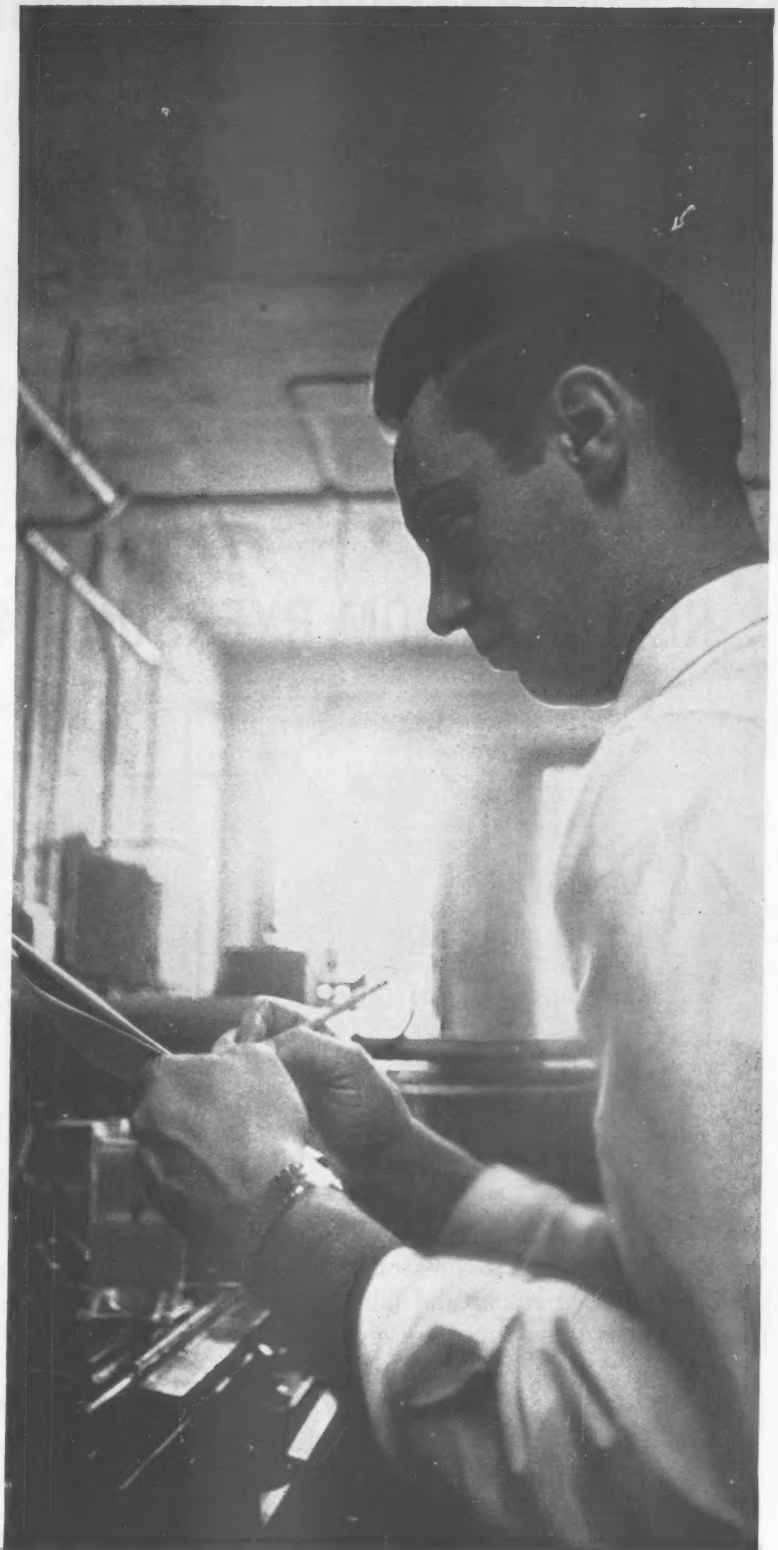

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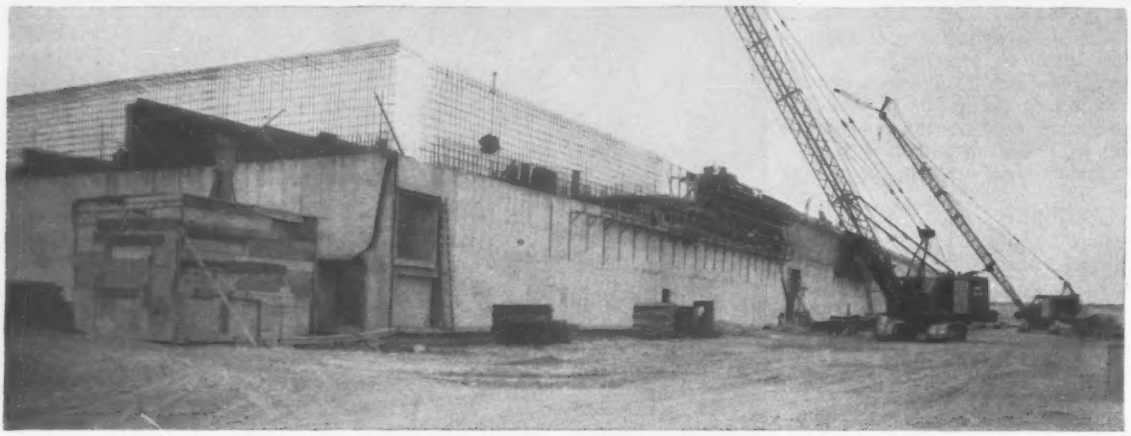

This 960 m.g.d. water filtration plant—the world's largest—is rapidly going up on Chicago's lake front. Contractor for filtered water reservoir: Herlihy Mid-Continent Co. Contractor for east and west half of filter substructure: Gust K. Newberg Construction Co. Architecture and engineering: The City of Chicago.

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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

TO YOUR GOOD HEALTH—Competition for new work killed off a record number of contractors last year. The total of 2,162 failures was the highest since Dun & Bradstreet started its monthly records back in 1934. But a leveling off late in 1958 and a sharp drop so far this month indicate contractors' businesses are healthier now than at any time since early 1956.

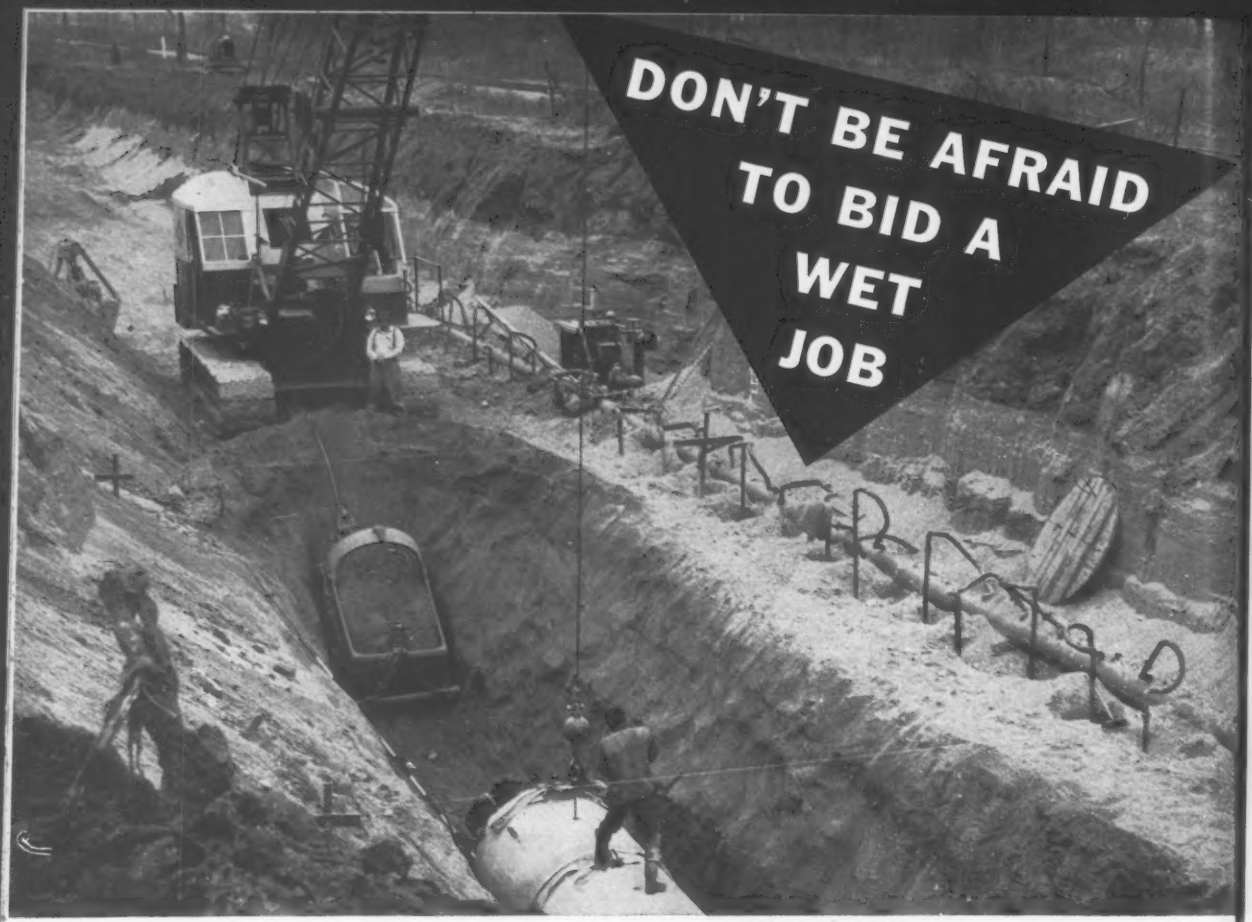
CONTRACTORS WILL BE CONSULTANTS—The same contractors who built United Nations headquarters in New York City are teaming up again on the $60-million-plus Lincoln Center for the Performing Arts (ENR Dec. 5, 1957, p. 167). The joint venture consists of George A. Fuller Co., Turner Construction Co., Walsh Construction Co. and Slattery Contracting Co. H. Chanlee Turner, Jr., will be chairman. The venture will serve as consultant during the design stage for a $5,000 per month fee and will be general contractor for 2½% of the construction cost.

INDIANS CHANGE TUNE—The Tuscarora Indians have stopped the war chants and are bringing out the peace pipes. Their "not for sale at any price" reservation land, needed for the reservoir of the Niagara Power Project, is now on the market. Asking price: $3 million—$500,000 more than the New York State Power Authority has offered.

FEDERAL CASH DOESN'T COUNT—It will be a lot easier to justify the cost of flood control projects if a new Missouri Supreme Court ruling catches on elsewhere. The court says the federal contribution may not be considered in figuring whether construction costs exceed the project's benefits. This means expected benefits will be matched only against the cost to the levee or drainage district.

WISHFUL THINKING?—"This proposal ducks the unity issue," said A. B. Kinzel of Engineers Joint Council last week as he set forth a scheme for amalgamating EJC and Engineers' Council for Professional Development. The proposal: Set up a corporation with ECPD, EJC and EJC's Engineering Manpower Commission as three operating divisions. But don't bank on all the societies agreeing with Mr. Kinzel that the proposal "carefully avoids" setting a pattern for an ultimate professional unity organization. It's a hot potato.

MIKOYAN LIKES OUR ROADS—Soviet commissars will probably be hearing a lot about the U.S.'s "new construction, new factories, plants, housing"—especially "the large-scale construction going on here of roads." These are the changes, since his visit here 22 years ago, that most impressed Russia's First Deputy Premier Anastas Mikoyan. That's what the glad-handing tourist said on TV's "Meet the Press" last week.



Contractors on three sections: Columbia Construction Co., Thompson Construction Co., Tousley Construction Co., Inc. — all Indianapolis

Photo shows one of the three sections of Lick Creek Sewer in Indianapolis, Indiana, where Moretrench Wellpoint equipment enabled the contractors to overcome threatening water levels and to place 50,000′ of pipe in a bone dry trench.

Water levels on the entire project varied from 15′ to 22′ in constantly changing soil ranging from all sand and gravel to stratified clay and gravel in a hard clay bottom.

Careful installation and expert supervision on this work guaranteed results — gave each contractor freedom to excavate as he saw fit and to progress as rapidly as possible with economy and safety.

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WASHINGTON OBSERVER

- **Key Congressional committees get new faces**
- **Coming: Federal aid for tollroads**
- **Labor chief's retirement delayed?**
- **Ike wants better public works planning**

- **Some important changes have been made in Senate and House committee lineups.**

  On the Senate Roads Subcommittee, the new chairman, Patrick McNamara, of Michigan, is expected to try to block President Eisenhower's gasoline tax increase. He replaces Sen. Albert Gore (D., Tenn.), who moves up to the Foreign Relations Committee.

  On the Senate Public Works Committee, the Democrats have a much bigger majority—10 seats against five for the Republicans. It was seven to six last year. Six new Democrats are on—Eugene McCarthy, of Minnesota; Jennings Randolph, of West Virginia; Stephen Young, of Ohio; Ernest Gruening, of Alaska; Edmund Muskie, of Maine; and Frank Moss, of Utah.

  The Senate Interior Committee now has 10 western Democrats against five Republicans. Senators Moss and Gruening are among them. You can expect a fight over President Eisenhower's policy of "no new starts, stretch out the work."

  In the House, the big change is on the Labor Committee. Chairman Graham Barden, of North Carolina has lost effective control. He helped block the Kennedy-Ives bill last year. The committee has five new Democrats, all from northern and western industrial areas—the ratio is now 20 to 10; it was 17 to 13. **A mild labor reform bill ought to get quick action with this committee realignment** (see p. 112).

- **Federal aid to tollroads will be pushed in Congress.** The states with tollroads being incorporated into the interstate system are behind the move. They got assistance this week from the Bureau of Public Roads. BPR did not say there should or should not be reimbursement. But it gave these alternate proposals in case Congress says yes:

  • **Pay states by adding extra miles to their interstate authorizations.**

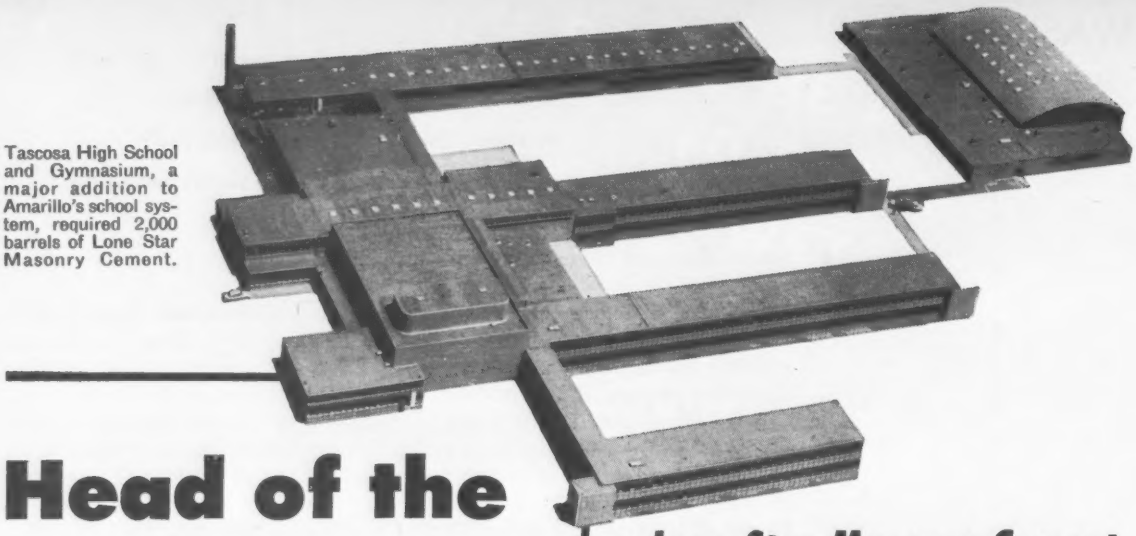
  • **Pay states in dollars**—with the stipulation the money would go only for other roadbuilding, banning diversion to other state programs.

  The federal aid would not be offered until after 1969, when the present highway program is expected to be completed. Officials estimate that portions of interstate roads that would be eligible would amount in costs of reimbursement to about $5 billion.

  Payments would be based on depreciated cost of construction, less any federal funds that had gone into the roads. Then states would get 90% of the final figure—the share Washington now pays on interstate roads.

- **Retirement of building trades chief Richard Gray may be put off.** AFL-CIO construction union presidents have failed so far to line up a successor. Some officials now urge no change until the September convention of the Building Trades Department. Mr. Gray's retirement was planned for late this month, ahead of the building trades Miami meeting.

- **President Eisenhower urges more and better public works planning,** though his 1960 budget gives fair warning that responsibility for carrying out plans rests with local governments (see p. 24). The President made the point last week in an impromptu visit to the Association of State Planning and Development Agencies convention.



Tascosa High School and Gymnasium, a major addition to Amarillo's school system, required 2,000 barrels of Lone Star Masonry Cement.

Head of the Class!

Lone Star Masonry Cement —the Educated Choice for Modern Schools

● Here is another prime example of master masonry at its best—the new Tascosa High School and Gymnasium in Amarillo, Texas. 2,000 barrels of Lone Star Masonry Cement were required for the project. Handsome, functional, with well-lighted classroom wings, this major addition to Amarillo's expanding school system will stand the test of time in design, workmanship and materials.

All over America, aroused citizens and school boards are demanding better schools—but they are demanding *economy as well!* In every test, the educated choice is the mortar that provides *permanent* beauty—the mortar that saves *time and money*—Lone Star Masonry mortar:

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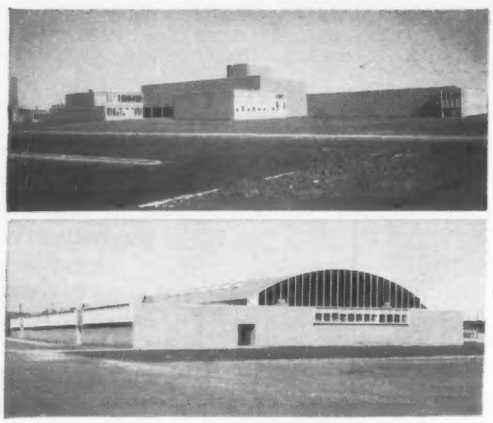
Take a tip from knowing architects, contractors and masons: put masonry mortars to the test, and you'll find Lone Star at the Head of the Class!



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93 PERISH IN CHICAGO SCHOOL FIRE
Could Happen Here
State's Fire Chiefs Cite Many Hazards
ALL SCHOOLS HERE TO GET FIRE CHECK
FIRE DRIVE SHUTS 7 MORE SCHOOLS
City School Has Third Fire; Its Tardy Alarm Assailed

Why Schools Are Not Fire Safe

"It Could Happen Here."

So read the headline of the PROVIDENCE JOURNAL one day last month.

Five days later, it did happen. A century-old school in North Providence burned to the ground.

Fortunately it was Sunday. No one was in the building; the incident made no national headlines.

But it demonstrated graphically that the recent Chicago school fire that killed 93 persons wasn't an isolated, freak accident.

No one contends that schools can be made 100% fire safe. But in the past month, numerous communities have been finding that their own schools do not comply with even the most basic fire protection principles.

Schools with open stairwells, inadequate exits, highly inflammable interior finishes, poor alarm systems, rubbish stored in open areas—all the factors that contributed to the Chicago tragedy and more—are being discovered in towns and cities of every size and description. A few examples:

- Philadelphia officials found 96% of the schools violating the fire code or tolerating unsafe conditions.
- Detroit investigators found 57 schools that had been constructed before the 1912 building code established standards for fire-resistant construction.
- Kentucky's state fire marshal estimated that the Chicago disaster could be duplicated in 75% of Kentucky's schools.
- Milwaukee investigators charged 10 new schools with building code safety violations.
- New York City closed 36 schools after fire department inspections turned up serious fire violations. After second inspections, 28 were allowed to reopen. Nearly 3,700 violations were found in the 2,000 schools inspected. The fire department now plans semi-annual inspections.

The big questions: Why do such conditions exist? How can they be corrected?

• To blame: building codes—Major blame for present school conditions can be attributed to inadequate and insufficient building codes and enforcement.

Some cities and states have adequate, up-to-date building codes, rigorously enforced. But they are exceptions to the rule.

Chicago has a building code covering schools. But it was adopted in 1949 and it's not retroactive to schools built earlier.

That is typical of many municipalities. It is the older schools that require corrective measures most urgently.

Other communities are covered by codes so antiquated that some of the building products called for are no longer being manufactured. Every structure built in such areas must, therefore, violate the code in some way.

Some areas have an adequate school code made virtually worthless because it is unenforced.

And some towns have no school building code at all.

In some states, a state agency has jurisdiction over school construction; in others, local authorities enforce the rules. In still others there's a combination of the two—and no one is quite sure who is responsible for what.

Result: Too much enforcement some of the time; not enough most of the time.

Other factors responsible for existing school problems: Apathy of local citizenry; lack of understanding on the part of educators; dearth of school funds; penny-wise, pound-foolish school boards; and architects who allow unsafe designs to be used.

Government red tape and local politics can also cause trouble. And there are indications that some manufacturers of combustible building materials lobby against revision of code requirements.

• What they're doing—Most communities inspected their schools immediately after the Chicago fire. The findings are now coming in, and attempts are being made to remedy defects.

A number of old schools have been condemned and abandoned. Repairs have begun on others. Inspectors are checking carefully for housekeeping violations.

Other measures are coming. Some municipalities and townships plan to spend millions of dollars to make their schools fire-safe. Plans are afoot to revise building codes or adopt new ones. Responsibilities for school building supervision are being more carefully delineated.

To find out what must be done to make your schools safe from fire, please turn the page.

Story starts on page 21

Here's How to Make Your

To Make Old Schools Safe . . .

1. Install an automatic sprinkler system with alarm.

No building is ever "fireproof." But a sprinkler system is the surest way to keep fires small and prevent loss of life. Here's what you need:

- For fire-resistive schools[1], provide sprinklers for stairwells, stages and hazardous areas, such as boiler room, storage areas and shops.
- For schools constructed of nonburnable materials, but with only lightly fireproofed or unprotected supporting members, provide sprinklers for hallways and attics as well.
- For schools of masonry and wood, or all wood construction, provide sprinklers in the entire building.

2. Enclose all stairwells with fire-resistive walls and self-closing fire doors.

Open stairways hasten the upward spread of fire and smoke. That's what happened in the recent tragic Chicago school fire.

3. Block off all vertical openings.

Open shafts act as flues to spread fire through the building.

Some older schools have masonry ventilation shafts that end in open attics. They should be torn out or blocked off at each floor.

4. Provide adequate exits[2].

You need at least two safe means of escape from any area. Add fire towers, inside or outside, if necessary. Keep exits independent of each other. Otherwise one fire can block all escape routes.

Make sure doors open in the direction of exit travel. Equip them with panic bars.

5. Do away with glass transoms over doors and glass windows in corridor walls.

Plate glass has low heat resistance and can do little to keep flames and heat out of classrooms.

The space can be filled in with wall construction or wire glass.

6. Subdivide any hallways more than 300 ft long.

Provide fire barrier partitions with swinging doors of metal and wired glass.

7. Enclose boiler room and hazardous areas with fire-resistive walls and ceilings.

Install fire doors at all access points. Brick up all unused openings.

8. Attach heat detection units to central air supply and exhaust fans, so the fans will stop if excessive heat is detected. Blowing air hastens the spread of fire.

9. Do away with combustible interior finishes.

Remove combustible trim wherever possible. Cover remaining surfaces with flame-retarding paint.

10. Use only operable window screening.

Windows may have to be used as exits and provide a means of entry for firemen in case of emergency.

11. Install an effective alarm system.

- A manually operated alarm system is essential. Automatic fire detection systems are valuable for detecting incipient fires.
- Keep electrically operated alarm systems and electricity for exit signs independent of building's electric supply. Faults or fire in building wiring then will not remove current from the alarm circuit.
- Mount a standard fire alarm box near the building entrance to notify the fire department. (Statistics indicate 65% of school fires are discovered by passers-by.)

To Make New Schools Safe . . .

1. Incorporate fire safety measures into the building layout.

The one-story school that affords direct access to the outside from any part of the building is the safest. When so designed, requirements as to type of construction are less stringent. Fire-resistive construction is desirable for buildings of two stories or more[1].

Divide the building into separate units. Don't have any undivided corridors more than 300 ft in length.

Segregate hazardous areas such as boiler room and laboratories from the rest of the building. Protect them with fire-resistive walls, ceilings and doors. For large schools, locate such units in separate buildings when feasible.

2. Check the building design for possible fire hazards.

Schools Fire Safe

You can submit plans to local fire or insurance authorities for an independent safety check.

3. Install a sprinkler system (see 1 under "Old Schools").

4. Enclose all stairwells with fire-resistive walls and self-closing fire doors.

5. Provide adequate exits.
Exits[2] should be within 100 ft of any room door, or within 150 ft in a building equipped with a sprinkler (see also 4 under "Old Schools").

All exit and stair doors should open in the direction of travel. Equip exit doors with panic bars.

6, Don't use combustible wallboard or any other quick-burning interior finish[3].

7. Provide easily operable windows.
If non-movable windows are used, substitute other means of entry for firemen and for exterior ventilation in case of emergency.

8. Safeguard central air circulating systems.
Install thermostatically controlled dampers in air ducts and ventilating shafts.

9. Observe the National Electric Code in all electrical installations[4].

10. Locate main cutoff valves of gas and oil lines away from the school. They should be free of the heat zone in case of fire. Make sure valves are properly identified, readily accessible.

11. Install an effective alarm system (see 11 under "Old Schools").

The ideal system is one that operates both automatically and manually, and alerts both school occupants and fire department in case of emergency.

12. Locate a good water supply nearby with hydrants conveniently located to the school.
And in multistory buildings, install a water system solely for fire-fighting.

To Keep All Schools Safe . . .

1. Keep sufficient hand fire fighting equipment in accessible spots. Your fire department can tell you what you need.

2. Store waste materials in a segregated area. Collect rubbish daily and store in metal drums.

3. Be extra careful with highly combustible materials. Watch out for flammable materials like paints, liquids and decorations.

4. Plainly mark fire fighting equipment, sprinkler systems, fire alarms and fire exits.

5. Mark valves for oil and gas lines so they can be readily seen in an emergency.

6. Hold regular safety inspections.
- Check fire alarms, detection systems, fire fighting equipment, sprinkler systems.
- Keep door locks and panic bars in an operable condition.
- Have qualified technicians inspect electric circuits and wiring.

7. Emphasize the importance of keeping doors closed.
Keep fire doors—especially those leading to stairways—free of wedges and obstruction at all times.

8. Provide a cloak room for clothing. Don't hang garments out in the open.

9. Hold monthly fire drills—and without warning. Vary them for different exits.

10. Instruct teachers, students and custodian on how to maintain a fire-safe environment and how to meet fire emergencies.

11. Ask for suggestions from teachers and students on how to improve fire safety. Encourage them to report any possible fire hazards.

12. Inspectors should report all safety hazards they find—even if they are not covered by any safety code.

[1] A fire-resistive building is one whose structural members are of non-combustible material and have fire ratings ranging from two to four hours.

[2] For more detailed information about location and number of exits, consult the Building Exits Code, National Fire Protection Association, 80 Batterymarch St., Boston, Mass.

[3] Fire resistant qualities of materials are rated in a listing published by Underwriters Laboratories, Inc., 207 E. Ohio St., Chicago, Ill.

[4] Put out by National Fire Protection Association, National Electric Code Committee.

(ENR's checklist for fire-safe schools is based on findings and recommendations of leading fire fighting agencies, government officials and educators.)

President Eisenhower

EISENHOWER WANTS:	DEMOCRATS WANT:
Housing: Withdrawal of federal support in all areas.	More aid in all areas.
Urban renewal: $250 million a year for next three years.	$500 million a year.
Airports: $65 million now; then elimination of federal grants.	Big boost—$575 million over the next five years.
Reclamation: No new projects, some major cuts in plans.	New western senators will push for more money, new plans.
Schools: $50 million for impact areas and Indian reservations.	24 senators want $11 billion for construction, teacher pay.

Construction Budget's Up—May

President Eisenhower plans to boost federal spending on construction programs to some $7.7 billion for the year beginning next July 1. That's a 6% increase.

But no one expects the spending proposals to fix the spending ceilings on specific programs in all cases. The big Democratic majority in Congress wants more spending for most construction programs—in many cases, sizable boosts.

This guarantees a hot political fight over the size of most of these progams during the months ahead—and perhaps until the 1960 Presidential election.

Involved in wrangling will be programs that run into countless construction contracts—housing, military and missile bases, reclamation, rivers and harbors, flood control, airports, highways, depressed areas.

Democrats will say it's a "phony budget" with "phony increases." They will say the President is taking credit for apparently bigger public works spending while holding back on appropriations that must be voted this year if the actual construction programs are not to begin tapering off after 1960.

These central themes will run through all the politicking:

- The President wants to hold the line or cut back on public works programs. He says we need a "breathing spell."
- Democrats say it's a crime against the economy and the people to be faint-hearted about the country's future and about supplying the people's needs.

The Administration has already run head-on into Democratic drives under way in three areas: airport construction, housing and depressed areas.

The Democrats plan to pass legislation for each of these programs calling for far more than President Eisenhower wants. If the President vetoes what they send to the White House, they are organizing to pass the spending progams over the veto.

Take airports: President Eisenhower's federal aid program for 1960 calls for $65 million a year, about the same as this year. But where part of the government money has been going for terminal facilities and maintenance of runways and taxiways, the Administration now would limit federal participation to construction of runways, taxiways and other "direct requirements in the landing areas."

The Democrats are behind speedy passage of an airport aid program calling for expenditure of $575 million over five years. (They, too, would eliminate parking lots and certain concession areas in terminal buildings from federal aid.) The President vetoed a similar Democratic measure last year, so the size of the airport construction program may provide the first test of the Presidential veto.

Take housing: There'll be no fuss about increasing the Federal Housing Authority's mortgage insurance authority. But the Democrats want more Treasury funds given to Fannie Mae to purchase mortgages—something like the $1-billion anti-recession purchase program that helped keep housing starts up to 1.2 million during calendar 1958. President Eisenhower has no such provision in his program.

The Administration is asking $250 million for urban renewal for each of the years 1960, 1961 and 1962; but it wants only $200 million for each of the years 1963, 1964 and 1965.

The President wants to cut the federal share of urban renewal costs from the present two-thirds to a 50-50 ratio.

Democrats are going the other way. Alabama's Sen. John Sparkman wants something like $500 million a year for urban renewal (see page 109).

Housing plays a key role in the President's hopes for a strong business rise this year and gets credit—in his economic report, also submitted to Congress this week—for sparking recovery last year.

President Eienhower says financing commitments already in hand will cause some rise in housing outlays over the next few months. But after that, he warns, the level of activity depends on how successfully builders can compete for funds in the financial markets. He is urging Congress to raise the interest ceiling on Veterans Administration mortgages as one way to keep funds flowing into mortgages.

The President asked for authority to raise the intereset rate on GI housing loans from 4¼% to 5¼%. He also asked that the 4½% and 5% rate on FHA-insured rental and cooperative housing mortgages be raised to attract private financing.

Congress Has

Budget Director Maurice Stans

Senate Majority Leader Johnson

Go Higher

Take aid to depressed areas: President Eisenhower is asking $55 million for 1960. But the Democrats—with some Republican support—are pushing for a much more dramatic program calling for $280 million as a starter.

Or take another angle of the President's cutbacks: He intends to (1) raise the interest rate on a variety of government loan programs and (2) force the states and localities to assume some of the costs born by the federal government up to now.

The budget message calls special attention to these "legislative proposals to adapt programs to changed circumstances": He would raise interest rates on veterans housing loans; rental, military, and cooperative housing mortgages; rural electrification and telephone loans; and college housing loans.

He would cut federal aid to these programs: urban renewal; flood control; school aid in federally affected areas; and sewage treatment construction grants.

"No new starts" again epitomizes the President's philosophy, just as it did a year ago. Congress refused the austerity prescription in 1958 and it will override some of the President's wishes again this year—but perhaps not to the extent of starting 63 new Army Engineer and reclamation projects, as Congress did last year.

Beyond federal construction spending for fiscal 1960, there is no dearth of authorized projects. Congress can apply starting funds for these as soon as it wishes.

The Corps of Engineers, Reclamation, TVA and other agencies will have plans completed by June 30 to the stage where contracts could be let for $2 billion worth of such projects.

The backlog of completely planned projects will increase to $2.8 billion by June 30, 1960, the budget message predicts.

At the same time, plans in process will total $7.4 billion this June 30. Authorized projects for which planned production has not yet started will amount to $5.2 billion. Over-all, the backlog of authorized projects for construction by these agencies adds up to $14.6 billion.

Power projects under construction will add nearly 1 million kw of federal generating capacity this calendar year and close to 1.2 million kw during calendar 1960, the budget indicates.

The budget calls for no postponement of new 1959 starts voted by Congress last year. These projects, most of them not yet out for bids, will go under construction as soon as local contributions in the form of right-of-way and payment contracts are obtained and engineering work has been completed.

On schools, the budget calls for no federal expenditures in fiscal 1960. But it contemplates some kind of bond guaranty of loan insurance to encourage school district construction borrowing.

Military construction shows a downtrend. But funds are asked for additional Nike-Hercules and Bomarc air defense missile sites and for strengthening of the existing radar warning system. The budget also recommends money for sites and support facilities for the Atlas, Titan, Polaris and Nike-Zeus missile systems, and for continued construction of the ballistic missile early warning system.

President Eisenhower proposes a sharp future cut in atomic energy construction appropriations. For fiscal 1960 spending will go up to $280 million from an estimated $240 million this fiscal year. But the President is asking for less in new money. If he has his way, construction in future years will be reduced. His budget asks for $102 million in new appropriations, with a supplemental request due soon for an additional $126 million.

The most hefty item in the new Administration budget requests is $75 million for a plutonium production reactor at the Atomic Energy Commission's Hanford Works in Washington State. The facility, expected to cost $145 million, received an initial appropriation of $45 million last summer.

President Eisenhower ties continued highway construction to a five-year tax increase of 1.5 cents a gal on gasoline to keep on a pay-as-you-go basis. Estimates are the increase will bring in $600 million in 1960, and some $3.6 billion over the five years—about the amounts needed to keep roadbuilding on schedule.

Pursestrings: But Budget Bureau Has the Purse

Something in the neighborhood of $7 billion will be approved for public works and other government-sponsored construction by the 86th Congress.

Most of this sum will be spent smoothly and without fanfare on thousands of projects ranging from atomic energy facilities to a new trail for hikers.

But some of the authorized money will not be spent. It will be blocked by one of the most controversial and mystifying agencies in Washington—the Bureau of the Budget.

Because of the current mood of economy in the Administration, some projects are certain to be postponed and work on others will be ordered cut-back. Though the projects are authorized by Congress, backed by powerful legislators and eagerly awaited by local interests, the Budget Bureau's veto will stick.

Wrathful lawmakers will accuse the bureau of being arbitrary, of flouting the will of Congress and exercising powers granted it by law.

The bureau's decision also will seem arbitrary to some construction men—and for good reason.

The bureau has the final say on how money will be spent—and at what rate—on every civil and military construction project of the federal government. This means the bureau can disrupt the plans of architects, engineers and contractors, reduce work forces and idle equipment.

Late last October Budget Bureau officials told the National Rivers and Harbors Congress it would turn loose all of the $1.2 billion voted by Congress for rivers and harbors, flood control and reclamation projects.

Now there's a new policy. President Eisenhower has declared war on the free-spenders in Congress, announced a balanced budget for the next fiscal year and called for a $3-billion slash in spending from current rates. Construction will have to be curtailed if these goals are going to be met, but officials don't know how much.

Sudden switches of this kind are an old story in the Budget Bureau.

Four times in recent years the bureau has launched significant changes of spending policy, independent of the wishes of Congress as expressed in appropriation bills.

In 1950 the bureau halted progress on 20 flood control projects after the outbreak of fighting in Korea, and went on to hold down construction outlays in general.

In 1953, when President Eisenhower

. . . Budget Bureau decides how and when to spend

took over the White House from President Truman, the bureau directed a broad curtailment of spending. This chopped $6.5 billion from the budget. Some $200 million was carved out of construction spending levels by this process.

In early 1957, there was a third economy drive. Again construction was hard hit.

By mid-1957 the recession was taken seriously by the Administration. The Budget Bureau got a new set of orders: Step up spending wherever possible. And overnight some $100 million was released to speed construction.

Now that the Administration is inaugurating a new hold-down, the bureau will again be the target of criticism from Congressmen and occasionally from construction spokesmen.

There is nothing obscure about the source of the Budget Bureau's power. It stems directly from the Constitution and from special laws adopted over the years by Congress. Here are the sources of its authority:

• **The bureau has no unique powers of its own.** It always acts on behalf of the President. It merely helps him function as chief of the executive branch of the government. This explains the bureau's independence of Congress. The Constitution states that the powers of the government are to be clearly separated between the legislature, the executive and the judiciary. As the President's voice in budget matters, the bureau is thus outside the jurisdiction of Congress.

• **Congress itself created the bureau in 1921** as part of a basic reform of the budget process in response to widespread public demand. With the growth of the government during World War I, the separate department heads had largely seized control of spending. One of the purposes of the 1921 act was to restore the President's constitutional authority—and many complaints now heard about the bureau are merely evidence that the act has been a success in this respect.

• **One of the constitutional powers of the executive department is to spend the money appropriated by Congress in an economical and prudent manner.** This is the source of the bureau's most controversial decisions—those in which it blocks or slows down the spending of money approved by Congress.

Last year, for example, Congress had approved outlays for the construction of 50 new armories, but the Budget Bureau released money for only 12. Congressmen from the districts where armories were blocked were furious. But the explanation was simple: The President, on advice of the Secretary of Defense, had decided to scale down the National Guard program to a point where only 12 armories would be needed. Rather than build structures that would only stand empty upon completion, the Budget Bureau halted the work.

"Our job is to see that money is not wasted just because it is appropriated," says Maurice Stans, the present Budget Director.

One of the little-understood powers of the bureau is to hold back money for reserves—another way of saying it can refuse to spend everything appropriated by Congress.

If Congress approves $25 million for a reclamation project, it is legal for the bureau to set aside $5 million as a reserve and apportion for actual outlays only the remaining $20 million. By exercising this power it can control to some extent the flow of dollars out of the Treasury.

It was these blocked reserves that the bureau dipped into in 1957 when it speeded up spending as an anti-recession policy. Congress often criticized the reserves, but it specifically approved them in the basic legislation establishing the bureau.

Despite all the scolding it is doubtful whether Congress would seriously consider stripping the bureau of its present functions.

"The bureau is the only control point standing between the appropriations and the spending agencies," Mr. Stans points out.

He argues that the spending agencies —if it were not for the Budget Bureau— could spend a year's appropriations in six months and come back for supplemental appropriations. This would keep Congress and the President in ignorance of the real condition of the budget. Most Congressmen agree that a control point must be maintained somewhere in the government.

Mr. Stans also points out that the Director of the Budget is the one man in government in a position to assess conflicting claims for expenditures—to weigh the value of a reclamation project, for example, against the value of a channel-widening job proposed by the Corps of Engineers.

Recognizing that the bureau should be a direct arm of the President, Congress allows the director, a deputy director and three assistant directors to be appointed without Senate approval.

The bureau is divided into five divisions. One is devoted almost entirely to construction—the "Resources and Civil Works Division." It's headed by Carl Schwartz.

Mr. Schwartz, the other division heads and the great mass of bureau employees are all career civil service employees of the government. They retain their positions no matter what party is in the White House.

The President is now considering a proposal to reorganize White House offices that would strip the Budget Bureau of some of its functions. But there would be no lessening of the bureau's present power to affect expenditures. Such authority is now exercised through the bureau's Office of Budget Review, and it would be retained by the same office, possibly under another name.

The reorganization would simply elevate the director of the Budget Bureau to a new position, director of an office of management. In this role he would supervise not only work now performed by the Office of Budget Review, but other management functions as well.

Bid's Too Good; 99.99% Under Estimate

Hazama Gumi, Ltd., is probably the world's most grateful contractor.

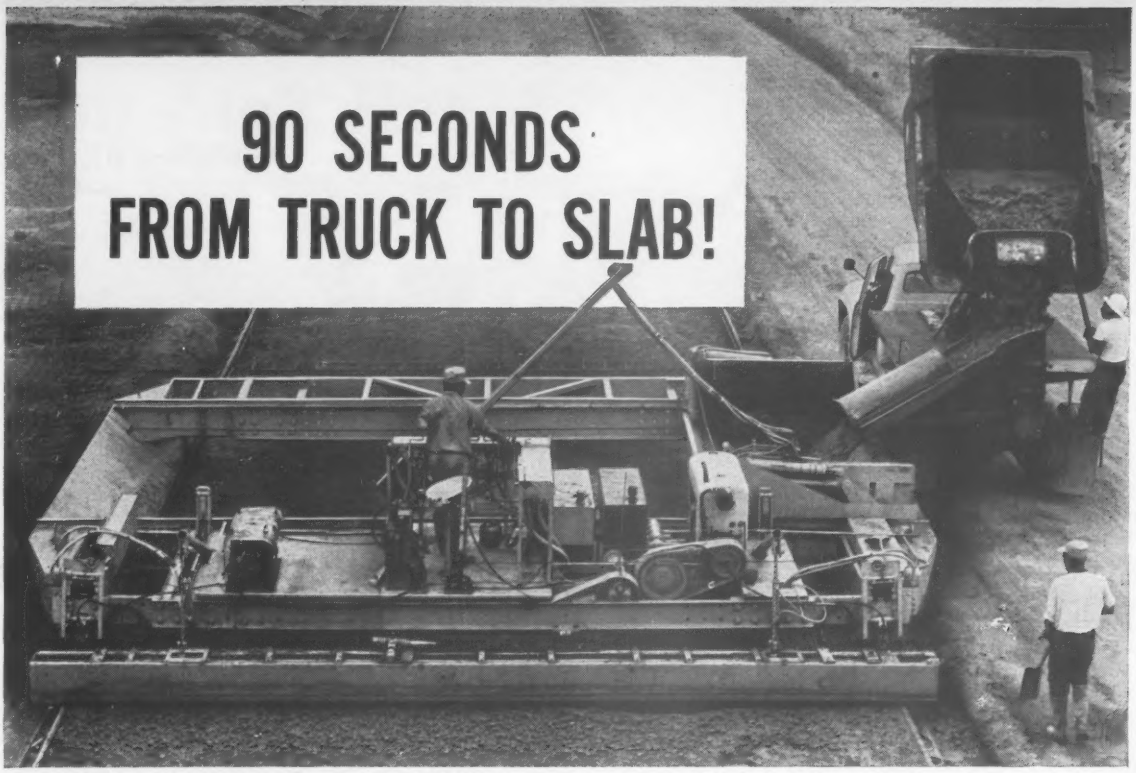
The Japanese construction firm recently aroused that nation when it submitted a bid of $30 to build a new palace for Crown Prince Akihito, who will soon be married. The job was estimated at $200,000.

Facing a flood of criticism from rival contractors, the Construction Ministry and the Tokyo press, the president of Hazama Guzi, Mitsunosuke Kambe, gave a humble explanation: "Emperor Hirohito visited Sakuma Dam when we completed it a year ago last October. Ever since then we've wanted to repay this honor by building something to show our gratefulness."

But gratitude or not, Construction Minister Saburo Endo vetoed the idea. He directed the seven contractors who bid on the princely palace to build it as a joint venture.

At first Kambe stood on his legal rights; then he gave in. The palace is expected to be finished next fall at a cost of $160,000.

This was not the first such gesture by Hazama Gumi. Last May, unknown to the public, the firm cleared a palace site for the late Grand Empress Teimei in Tokyo's Aoyama for $30. It was a $140,000 job.



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New Technique Used for High Gorge Ice Barrier

Seattle City Light Co. is using a new method of forming an ice barrier to protect second-stage construction of High Gorge Dam on the Skagit River in Washington.

The firm is trying to avoid the troubles experienced when the original ice barrier was first put into operation (ENR March 7, 1957, p. 28). At that time, Merritt-Chapman & Scott Corp., the contractor, and the power company came close to a parting of the ways over failure of the barrier to perform as expected.

The new barrier consists of two rows of holes, 3½ ft apart, in staggered formation. The barrier will be a minimum of 8 ft thick, up to 132 ft deep and 230 ft long. The freeze points of the new section have been connected to refrigerating equipment for the past two months and brine has been circulating at −30F.

The first ice barrier originally consisted of a single row of holes, 4 ft apart, with brine circulated at −10F. When hot spots developed that would not freeze and water continued to seep into the excavation, additional holes were drilled and the brine lowered to −30F.

That barrier, still being maintained, is 395 ft long and up to 250 ft deep. Recent tests show the ground is frozen as far as 150 ft from the freeze points. Concrete is still being placed in the first-stage construction and is now 115 ft above bedrock.

Court Rules Out Ohio Law Barring Sewer Extensions

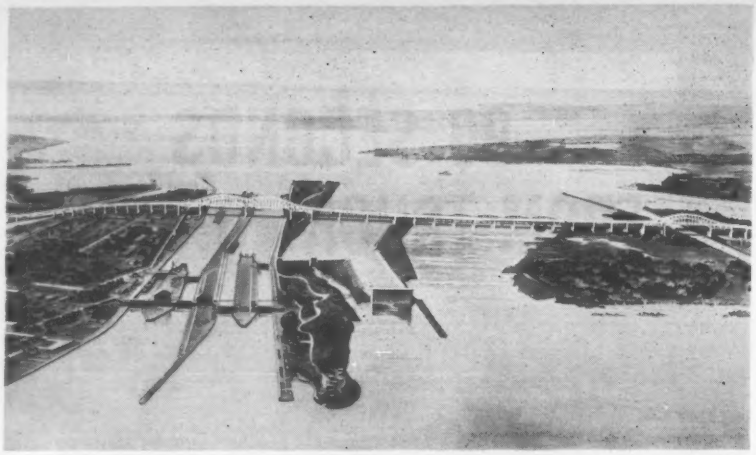
An Ohio law prohibiting municipalities from spending sewer rentals to build new sewer lines has been declared unconstitutional.

Judge Charles B. Holtsberry held in Licking County Common Pleas Court that the law violated a state-constitution section that gives municipalities the right to operate utilities serving their inhabitants.

The case was requested by M. M. Shoemaker, a Granville, Ohio, councilman. He asked the court to affirm the village's right to extend a trunk line to serve a planned new housing development.

The council authorized the sewer last October, but the village's Board of Public Affairs refused to go ahead with the project. The board believed the state law and a similar village ordinance prohibited members from acting.

The state law thrown out permitted the use of sewer funds for enlargement or replacement of present systems, but barred using the funds to lay sewers to unsewered areas.



New Bridge to Canada Coming

Engineering recommendations for a long-sought bridge to connect the U. S. and Canada at Sault Ste. Marie (Michigan and Ontario) call for 12,000 ft of bridge and approaches.

The toll crossing would carry two 14-ft traffic lanes and two 2-ft walkways. Cost is estimated at $18 million.

The U. S. section would include two main spans, each 430 ft long, with two 200-ft-long end spans. The Canadian side would have one 430-ft-long main span and two 200-ft-long end spans.

These main structures are to bridge the American and Canadian ship canals. Lessers spans will cross the U. S. power canal and the St. Mary's River rapids.

River spans would total 4,810 ft. American approaches would be 4,145 ft long; Canadian approaches, 3,045 ft.

The report was prepared by D. B. Steinman, New York City consulting engineer. It is being studied by the International Bridge Authority, a body created by the State of Michigan and subscribed to by the Ontario interests.

The authority is also investigating methods of financing the crossing, and a report is due in a month or two.

Space-Truss Roof Spans 100 Feet

Welded, tubular, steel trussed arches with triangular cross section support the 100-ft span roof of a new supermarket in Florida, South Africa. The arched roof rests on concrete buttresses of varying heights outside the walls of the building. Steel-cable ties 20 ft below ground connect the piers on opposite sides of the structure to take arch thrust.

Noise in Buildings?

You Ain't Heard Nothin' Yet!

There were helpful hints aplenty at the two-day Building Research Institute Conference on Noise Control in Buildings, held in New York City last week. Acoustical experts, material suppliers, architects and engineers pitched in with advice on how to eliminate unwanted sounds.

They all agreed on one thing: The time to exercise noise control is in the planning stage. The longer the delay after that stage the higher the cost and the more unsatisfactory the result.

• **Trend: More noise**—The discussion made it clear that contemporary construction and greater use of machines tend to make present-day buildings noisier than older ones. Thus, noise control is more necessary now than ever.

In new office buildings, for example, annoying noises may be developed by air-conditioning ducts or equipment, communication systems, typewriters and business machines. At the same time, lightweight floors, ceilings, exterior walls and partitions or ceiling plenums and less-than-story-height partitions do not obstruct passage of unwanted sounds sufficiently.

The solution to the noise problem is not simple. The owner can eliminate as much noise as he wants, but the cost usually rises rapidly with the number of decibels taken out. So there is always the difficult question of how much noise reduction is worth while. And some noise may even be desirable for background to eliminate other unwanted sounds that could be annoying, such as the laughter from the room next door after a joke you couldn't quite hear.

• **Things you should know**—Robert B. Newman, vice president, Bolt, Beranek and Newman, Cambridge, Mass., presented some basic acoustic concepts. He pointed out that materials can be used to control noise in two ways: Absorb it, and isolate it.

For absorption, porous materials generally are desirable. The objective is to reduce sound energy through frictional drag.

For isolating sounds, weight, or mass, and stiffness are desirable. But you can't cut off sounds with a heavy barrier if you permit openings in it.

Before you call in an expert to solve an acoustic problem, Mr. Newman advised, first see if you can move the noise source somewhere else where it won't be annoying.

Or try an "acoustic perfume"—a pleasant background sound that drowns out the noise. If you can't succeed with these techniques, at least get the noisy object up in the air, on resilient pads.

Richard Wells, General Electric Co. acoustical engineer, offered some advice for preliminary efforts in eliminating noise from machines: Try to eliminate the machines; try combining them so that fewer can serve the same function; order quieter equipment.

Toward this end, manufacturers of machinery are being requested to include sound ratings on their equipment with other characteristics in catalogs.

How can specifications be written to control noise? Alfred L. Jaros, Jr., consulting engineer, Jaros, Baum and Bolles, New York City, made these important points:

• The specs should define who will pass on the acceptability of the results.

• When alternates are permitted, the control of the architect or engineer should be retained so the intended results are not voided by acceptance of makes of equipment other than those specified.

• Don't allow any air-handling equipment to be used for temporary heating during construction. Dirt might get into the system.

• Proper pitching of pipes is important to avoid water hammer or other noise sources.

• It may be desirable to present acoustic standards, for equipment such as air conditioning, in a separate section of the specifications.

• Specifications should guard against duct construction that might cause noise: Ducts that are too frail or inadequately braced may rattle, duct joints that leak may whistle; ducts that are not correctly shaped at turns, splitters and branches, or that have badly designed and located dampers may create noise because of turbulence.

The conference was sponsored by the Acoustical Materials Association, Anemostat Corporation of America, Armstrong Cork Co., Baldwin-Hill Co., E. F. Hauserman Co., International Business Machines Corp., Johns-Manville Corp., National Gypsum Co., Owens-Corning Fiberglas Corp., and Rollform, Inc.

Miami's Air Terminal—At Last

In the works for two years and not yet finished, the new terminal building complex at Miami's International Airport will be dedicated February 1.

The project is a local political football that has mushroomed during two separate county administrations.

Begun as a $12-million project in 1956, the expanded terminal will cost an estimated $28 million before it is finished a year from now. Increased air travel has brought cries from succeeding administrations that the terminal would never do as originally planned.

The original plan called for a terminal building with four finger sheds extending onto the hardpan for handling passengers. Construction began in 1956.

In March, 1958, $3.9 million worth of contracts were awarded for construction of a public service building and a fifth passenger-loading finger.

In August, contracts totaling $3 million went for a 450-ft addition to the terminal building and for a sixth finger. Now awaiting court action are contracts for a $1.9-million hotel to be built above the public service building, and a $125,000 toll building planned for the parking area. It has been charged that the contracts were not awarded on a strictly competitive basis.

At present, the two-story, semi-circular terminal building is 130 x 1,200 ft long with five fingers, each 700 to 1,000 ft long. The terminal and two-story portions of the fingers have concrete, fireproofed, structural steel frames. Walls are stuccoed concrete block; floors are concrete with terrazzo in public areas. Single-story sections of the fingers are wood-framed and considered expendable.

The control tower sits over five floors of office space in a 60 x 140 ft structure on top of the terminal building.

Access to the terminal building is provided by an auto ramp at the second level. The connecting roadway system, including an interchange at the adjacent highway, costs about $3.5 million. Parking facilities near the terminal building have space for 5,000 cars.

Architects for the terminal project are Steward-Skinner Associates, Miami. The structural engineer is Jorgensen & Schreffler. Howard, Needles, Tammen & Bergendoff are consulting engineers for the Miami Port Authority. General contractor for the original terminal and four piers is G. K. Newberg Construction Co. Fred Howland Construction Co. is the contractor for the terminal addition, added piers and public service building.

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Big Plan Pushed for Atomic Power Reactors

A major program of atomic power reactor construction—including a start on up to four new prototype plants—will be launched this year if Congress and the Eisenhower Administration heed the advice of an industry advisory committee.

The committee, appointed by John McCone, chairman of the Atomic Energy Commission, recommends spending some $225 million per year to develop and build reactors.

Although the industry group expects electric utilities and reactor manufacturers to pick up a healthy share of the tab, it says the government should build the reactors if private enterprise doesn't.

The recommendations generally are being welcomed at AEC and the Joint Congressional Committee on Atomic Energy. But if it is to get off the ground, the program will have to do so over the strong objections of an economy-conscious Budget Bureau.

The Republican-dominated AEC has thus far steered away from building federal atomic power plants other than small, experimental types. For larger reactors it has favored a "partnership" approach; companies building privately owned reactors are given research and development aid.

Democrats don't like this. They charge the "partnership" program is designed mostly to delay or prevent government construction of large-scale reactors. Democrats favor government construction as the quickest and cheapest route to development of competitive nuclear power.

The Democratic-run Joint Committee on Atomic Energy came up last summer with a proposed long-range program involving expenditure of some $275 million per year to develop and build 10 or 12 reactors—almost half of which would be large-scale plants of 200,000 kw or more.

The report submitted by the AEC advisory committee is being eyed as an additional aid to a compromise. The group offers something to both sides.

The committee recommends a construction start in 1959 on reactors of the boiling water, pressurized water, gas-cooled and organic moderated types, if current studies indicate technical feasibility. The reactors should be built and operated by AEC if industry fails to move quickly enough, the advisory group believes—a point important to the Democrats.

These reactors, as well as others to be built in the next few years, should be prototypes, says the committee. (Prototypes are reactors of 50,000 kw or so aimed primarily at proving out a design.) But, unlike key Democrats, the industry committee feels large-scale plants should not be built until private enterprise is ready to build them. This is the view of private power companies and the Republican Administration.

By substituting prototype reactors for the large-scale plants called for in the Democratic program, the advisory group claims cost to the government can be held at present levels—roughly $190 million per year. A "crash" program of stepped-up expenditures is viewed as unnecessary and perhaps unwise.

Despite the optimistic cost estimate, budget-minded Administration officials are likely to balk at building three or four reactors in one year. And public power Democrats will oppose the indefinite delay on construction of big reactors.

Nevertheless, both sides find much that is attractive in the report. Whether it will lead to creation of a compromise national atomic program supported at both ends of Pennsylvania Avenue will become more apparent when the Joint Atomic Energy Committee opens hearings on the civilian power program in mid-February.

Faulty Backfill Caused Pipe Distortion

Arbitrators have partly settled the question of who will pay for remedying the distortion of a 66-in., corrugated-pipe sewer outfall line in Salinas, Calif. What made the pipe buckle was a hotly debated question, but all concerned agreed improper backfill was a factor.

Before the repair agreement was reached, the situation threatened to turn into a round-robin of lawsuits; with the City of Salinas, owner of the sewer, suing the contractor and supplier, and each of them suing the other two.

Under the agreement reached between the city and the contractor, Salinas will pay up to $37,500 for selected backfill to provide proper support for the 2,000-ft damaged section being replaced in the 7,500-ft-long outfall.

The city's original bid invitation specified backfill of 90% compaction but did not stipulate select backfill. The contractor used native soil that did not compact as well as backfill.

The contractor, Souza and McCue, Yuba City, Calif., is now laying the pipe. The job was halted last summer when the distortion was discovered.

Meanwhile, the contractor and the supplier are trying to decide who will pay for the pipe to replace the distorted section.

The distorted pipe—10- and 12-gage corrugated metal with asphalt lining—was laid through sandy clay, river run sand and muck. Crushed rock was placed ½ to 2 ft below the flow line for stability. Well points kept out water.

Conditions were so unfavorable that the daily rate of completion was only 24 ft, compared to an expected 240 ft. The job was stopped when the distortion, and joint cracks up to one inch wide, were discovered.

Around the Country . . .

• **Swimming pool roof "floats"**—The swimming season in Ashland, Ore., started this month, thanks to an air-supported plastic building. The 50-x125-ft, arched structure encloses the heated pool at Twin Plunges Recreational Park. It was manufactured by the G. T. Schjeldahl Co., Northfield, Minn.

• **Skyscraper plans**—A trio of skyscrapers will rise within a two-block area in Atlanta, Ga., in the next few months. Largest of the three will be a 22-story, $20-million home for the Atlanta Merchandise Mart, Inc. Nearby will be a 21-story, $6-million office building, to be leased by Georgia Power Co. The third structure reportedly will be at least 14 stories and cost about $2.5 million.

• **Desalting progress**—The U.S. Interior Department and the State of New Mexico have signed an 18-month agreement for mutual aid and exchange of information on saline-water problems. New Mexico is the second state to enter into such agreements, which are authorized by the federal Saline Water Act of 1952. California signed last April.

• **Bad year in Cleveland**—1958 was Cleveland's poorest building year since 1949. Figures disclosed by the Building Commissioner show 8,019 permits issued last year for a total value of $57.2 million. In 1949, 7,739 permits worth $40.3 million were issued. Reasons for the bad showing last year: long strike by the building trades; economic recession.

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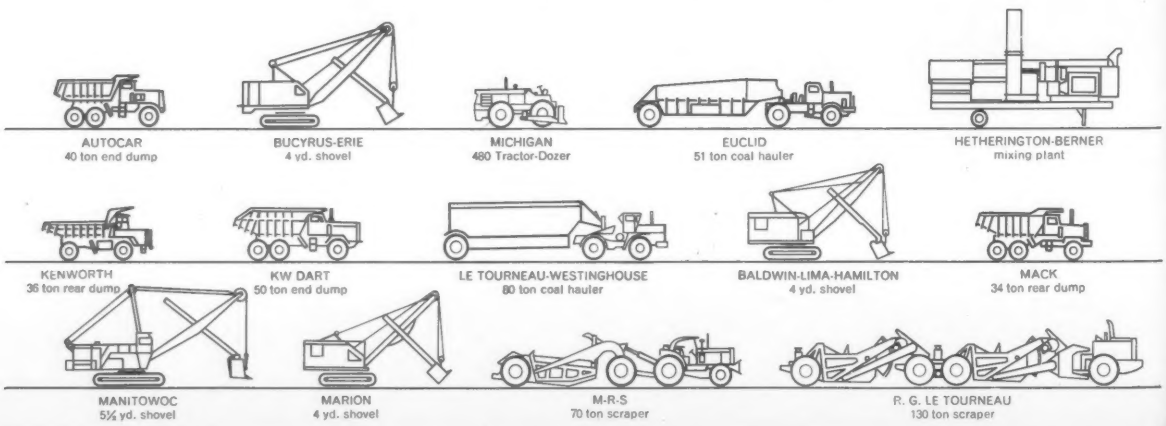

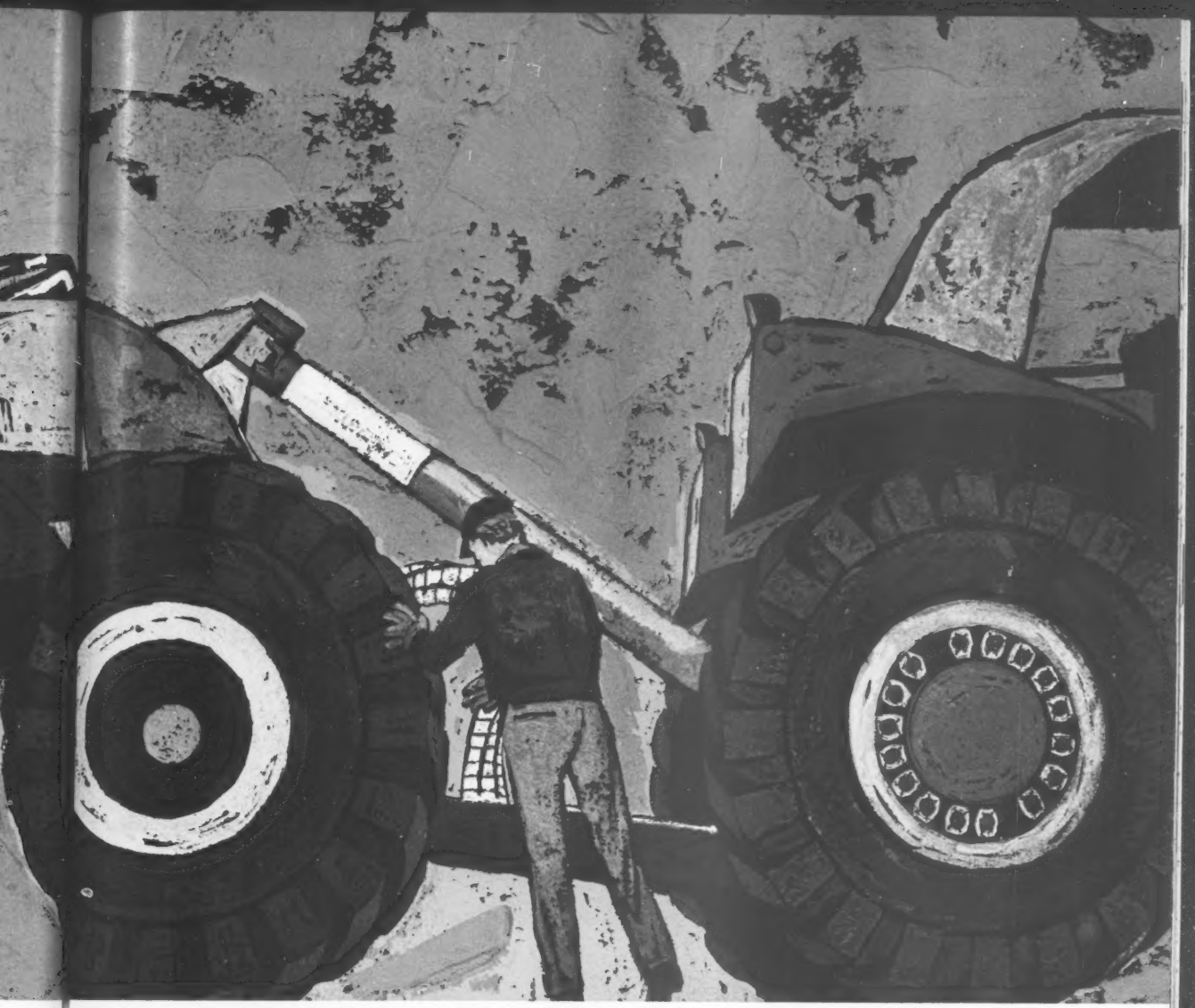

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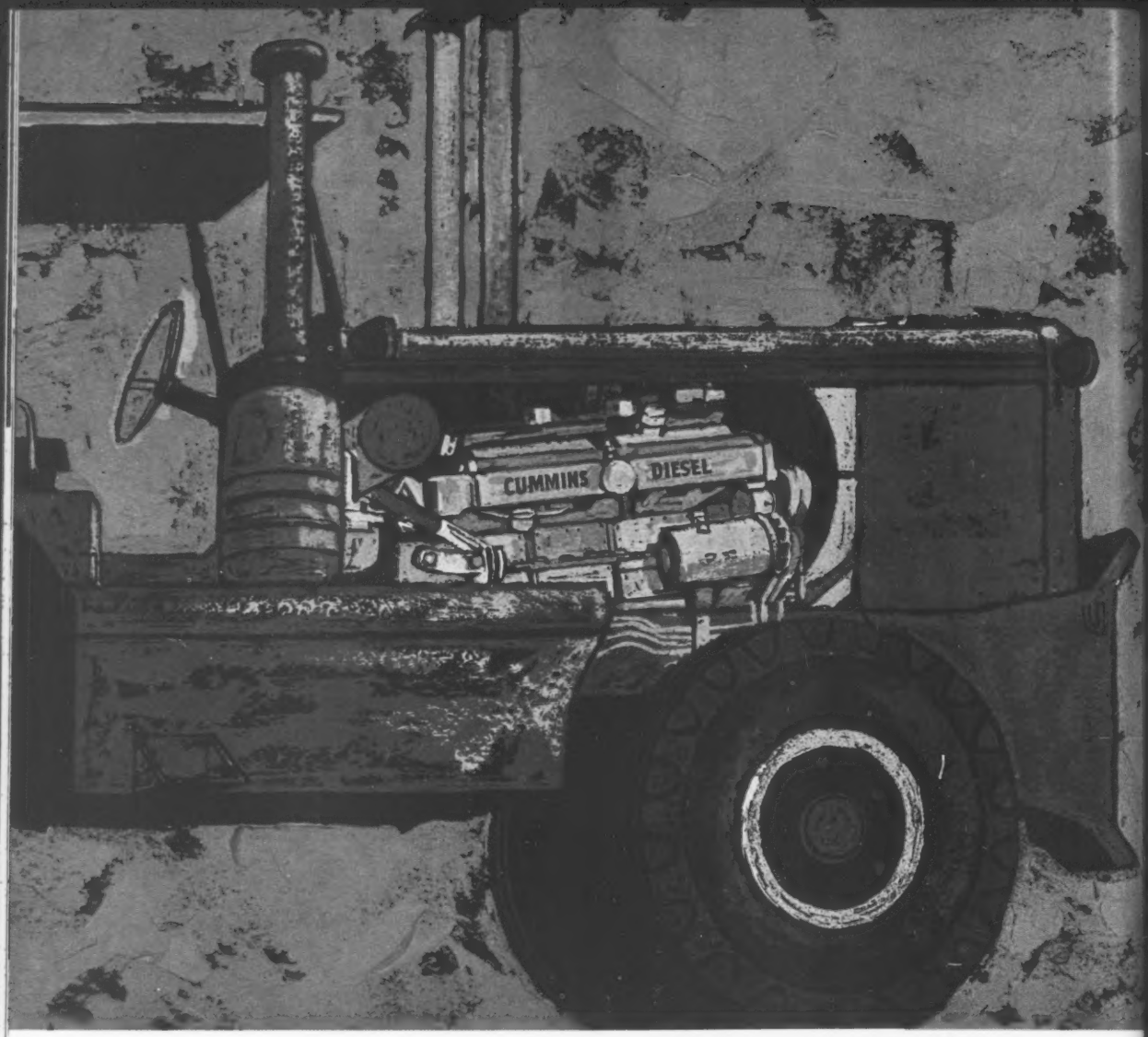

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Working first from the ground, later from a winch-hoisted platform . . .

French Spray Concrete For a Dam

A dam in France has been built by spraying concrete through a nozzle against the structure's forms.

The equipment supplier, Compagnie Parisienne d'Outillage a Air Comprime, reports the contractor, Dodin, of Paris, used this procedure:

The mix contained equal amounts of sand (0 to $\frac{3}{16}$ in.) and crushed stone ($\frac{3}{16}$ to $\frac{3}{8}$ in.) plus the cement. The mix was shoveled into a 6-cu-ft conical container that could be closed and subjected to compressed air.

Air pressure forced the concrete through a hose to the nozzle. Then another supply of compressed air, from a second hose, splattered the concrete against the forms of the structure.

The job was a multiple-arch dam for the water supply of the village of Equeurdreville, near Cherbourg. The dam is 62 ft high, 436 ft long and contains 14 arches of about 28-ft span.

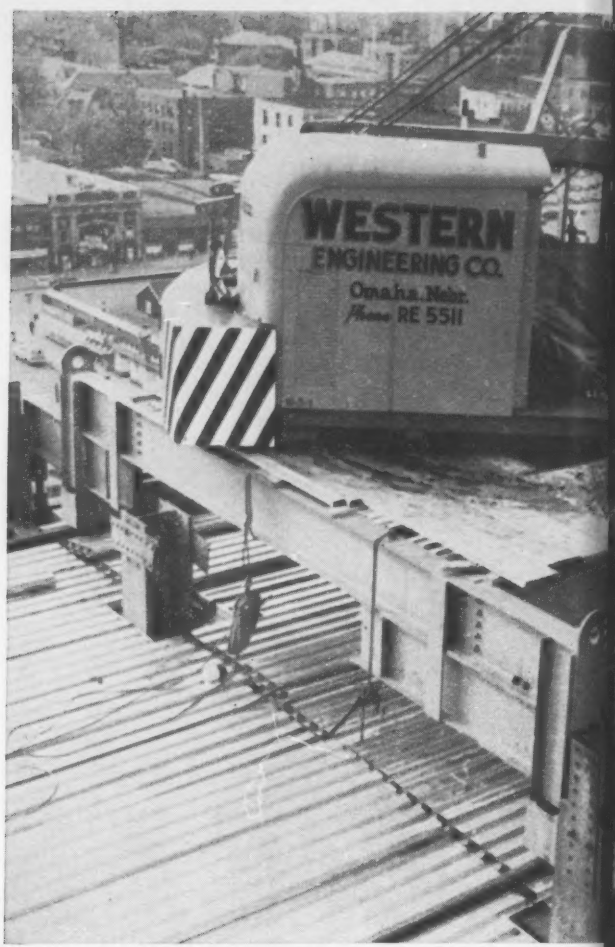
The arches are inclined at 1:1 slope. Their 8-in. thickness was built up in two sprayed layers; the first, 6 in., the second, 2 in. The arches are reinforced by two layers of $\frac{3}{8}$-in. rods, running from top to bottom, and two layers of $\frac{1}{2}$-in., rods placed diagonally at 45 deg.

The contractor first built the ribs, or buttresses, between the arches. To them he attached wood skids. This permitted him to pull the 10-ft-long arch forms upward as concreting progressed. The contractor used four sets of forms, left each form in place four days.

Dodin concreted the arches' bottom 26 ft with the equipment placed at ground level. But for the rest of arches' 78-ft, 6-in. length, the equipment was moved to a footbridge set along the top of the dam.

One man did the spraying from a platform. A winch hoisted the platform up the inclined arches each time the forms were raised.

Two other men on the platform tamped and troweled the fresh concrete.



Crane did the job of two stiffleg derricks . . . **Rolling carriage gave mobility for placing steel in**

Rail-Mounted Truck Crane Speeds

What would have been a clumsy chore of steel erection for two stiffleg derricks became a smooth, fast operation for a rail-mounted crane.

The unusual method was dictated by the size and shape of a $5-million addition to Northern Natural Gas Co.'s headquarters in Omaha. The 16-story structure is 152 ft long, but only 52 ft wide.

The "railroad in the sky" was a 22½-ton crane that was lifted off its truck mount and set on a specially built undercarriage. The modified crane rode on standard 90-lb rails laid the length of the building on top of the steel framing.

This allowed the crane to travel from end to end of the structure; the 50-ft boom and 20-ft jib spanned the building's width with room to spare.

• **Big payoff**—Comparative results of the crane vs. derrick system for the job are impressive. Studies by the builder indicated conventional leapfrogging with stiffleg derricks would have required a minimum of seven derrick setups and removals to place the steel from the sixth floor, where aerial work began, to the main roof, where a two-story penthouse was topped out. Each installation would have required seven working days, or a total of 49 working days (almost 70 calendar days).

In contrast, the crane was set up, made four jumps and was removed in ten working days (14 calendar days).

Result: Lower cost for the contractor; earlier occupancy and reduced interest on interim financing for the owner.

• **Brainstorming idea**—The steel-erection contract was awarded to the Western Engineering Co. almost a year before the general contract for the building. The firm took advantage of the time to study erection problems.

It built a complete eighth-scale model of plywood and gathered its key men to kick the problem around. Each person tried to assemble the model with a minimum of derrick setups.

No idea was eliminated in the initial go-round. Out of the sessions came decisions to use:

• An elevated foundation for a 30-ton stiffleg derrick for initial steel erection (because of crowded street conditions).

• A 130-ft steel boom as a ginpole for placing 25-ton beams at the seventh floor.

• The novel crane method for the upper part of the building.

Everyone agreed on the derrick and ginpole, but there was considerable skepticism about using the crane.

The method had been used once be-

long, narrow frame . . .

Hoisted as a single unit, it saved 35 days of rigging time.

Steel Erection

fore, in Pittsburgh, but that job called for a 7-ton crane on a clear deck. The Omaha job needed a 22½-ton crane working on a path cluttered with column stubs. The advantages promised for the system were so great, however, that the steel erector developed full plans.

• **Traveler design**—The key to the crane's success is the undercarriage or traveler. It was built of I-beams and measured 20 x 18 ft. The central portion was 38 in. above the deck, allowing the frame to clear an intermediate row of column stubs by ½ in.

Four 10-in., double-flange wheels rode the rails, which were set 20 ft apart. The rails, in turn, were tack welded to the transverse beams of the building frame. These beams, set at 8-ft centers, were adequate to carry the rig's weight while it was moved.

When the machine was working, loads were passed by outriggers and screw jacks to the girders of the building frame, which were set 28 ft c-c. The outriggers helped stabilize the rig when work was in progress. They were retractable, allowing the rig to roll between column stubs when it was moved. The 4-ft retraction was important when the machine was hoisted, too.

• **Steel erection**—The pattern of steel erection was dictated by the building design. The structure is only two bays wide but varies from 8 to 10 bays in length. The crane first erected two decks of the lane parallel to the one its rails traversed. Then it framed the ends of the lane it occupied, ending boxed up in the center bay. Framing of a single two-story tier usually took seven calendar days.

Four chain falls hoisted the crane 25 ft to the next working level from its boxed-in position. The machine set corner columns for the bay immediately above and helped place temporary beams to brace them.

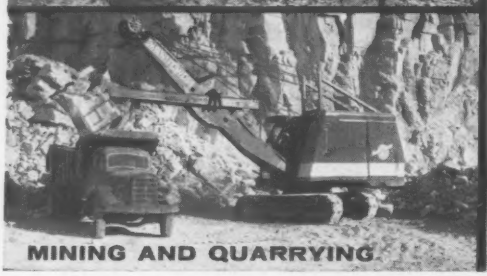
Two beams laid temporarily across the framing carried the 10-ton capacity chain falls. The falls ran to lifting eyes built into each corner of the crane undercarriage.

A crew of 18 manned the hoists and lifted the crane until it was above the next operating level. Actual hoisting time usually took two hours.

The rest was easy. During the lift, floorbeams of the bay at the new operating level were pulled out of the way to provide an opening through which the crane could be hoisted. With the crane above the new operating level, the beams were pulled back, connected, and the crane rails were laid out on them to take the crane.

When the steel frame was finished, the crane was lowered, in parts, from a cantilever beam at the 15th floor.

(*Story continued page 42*)



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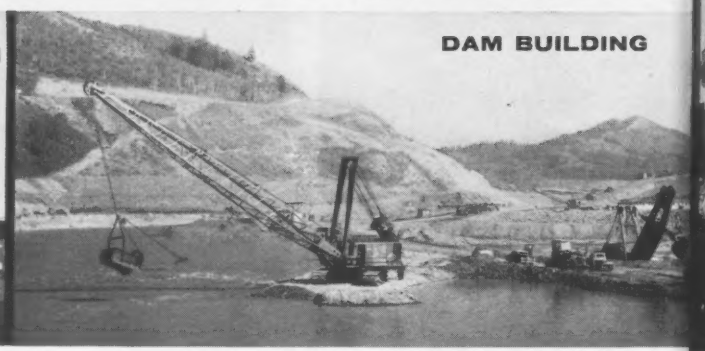

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model **2800**	rubber	.....	40 Ton	1½-2-Yd.
model **2900**	rubber	.....	60 Ton	1½-2-Yd.
model **3000**	crawler	2-Yd.*	40-50 Ton	1¾-2¼-Yd.
model **3500**	crawler	2½-Yd.*	60 Ton	2-2½-Yd.
model **3500TC**	rubber	.....	80 Ton	.....
model **3600**	crawler	3-Yd.*	65 Ton	3-Yd.
model **3900**	crawler	.....	60-80 Ton	3-3½-Yd.
model **4500**	crawler	5½-Yd.	100 Ton	6-Yd.

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SCALE MODEL helped Western Engineering plan the erection. Edward Foster, president, demonstrates how the crane was used.

• **Derrick in tight space**—Framing for the 30-ton stiffleg derrick used at the beginning of the job was as important a feature as the rail-mounted crane.

Crowded space at the building site complicated the job from beginning to end. An alley around three sides of the building provided the only clear area. But the only space available along this alley for setting the stiffleg derrick was bordered by a one-story garage; it couldn't be razed and it couldn't take the weight of the derrick or its loads.

The answer was to carry the derrick on 80-ft-long, 36WF150 beams above the garage. These beams were supported on steel columns seated on concrete footings in the garage.

One beam crossed over the garage and another ran along one wall, forming a tee frame platform for the derrick.

This stiffleg derrick did three jobs: erected structural steel up to the sixth floor; hoisted the rail-mounted crane to the sixth floor for the upper work; and set girders at the seventh floor, using the demounted 130-ft boom as a ginpole.

• **Building bridge**—A seven-story wing at the rear of the existing building was incorporated into the addition, despite the fact its frame is too light to carry the load of the added floors above it.

Five plate girders carried the added weight by spanning the 48-ft-wide wing. They rest on steel columns placed outside the existing walls. Each girder weighs just under 25 tons.

The boom of the stiffleg derrick, held in place by guys, was mounted in the alley at the rear of the existing wing. Temporary beams bolted at the tops of the five pairs of columns served as a skidway for moving the girders across the top of the building.

An erection crew hoisted the girders one by one with the improvised ginpole until they cleared the end of the building wing; slacking off the ginpole guys tilted the whole rig in so the girders could be lowered onto the skidway.

Workers with block and tackle come-alongs pulled the girders over the skid beams into position at the columns.

John Latenser & Sons of Omaha is the architect for the project. The structural engineer is Finney & Turnipseed of Topeka, Kan. Peter Kiewit Sons' Co. is the general contractor. Pittsburgh-Des Moines Steel Company held the steel fabrication contract; Western Engineering Company performed the steel erection.

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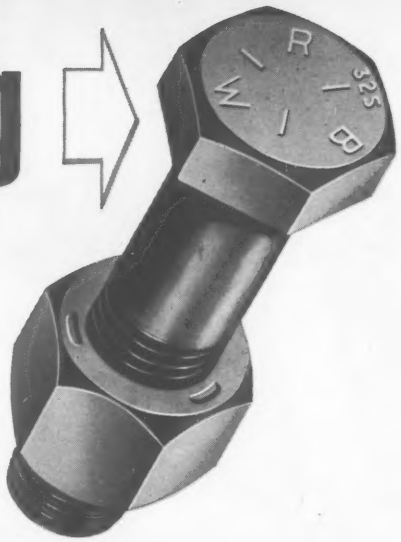

...for buildings

No doubt about their superiority over rivets in performance and in economy. High Strength Bolts make permanently tight connections under all loading conditions; cost less installed than rivets; are approved by AISC and local codes.

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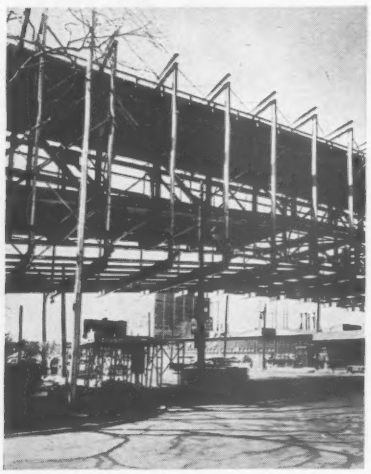

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Morgan L. Woodruff
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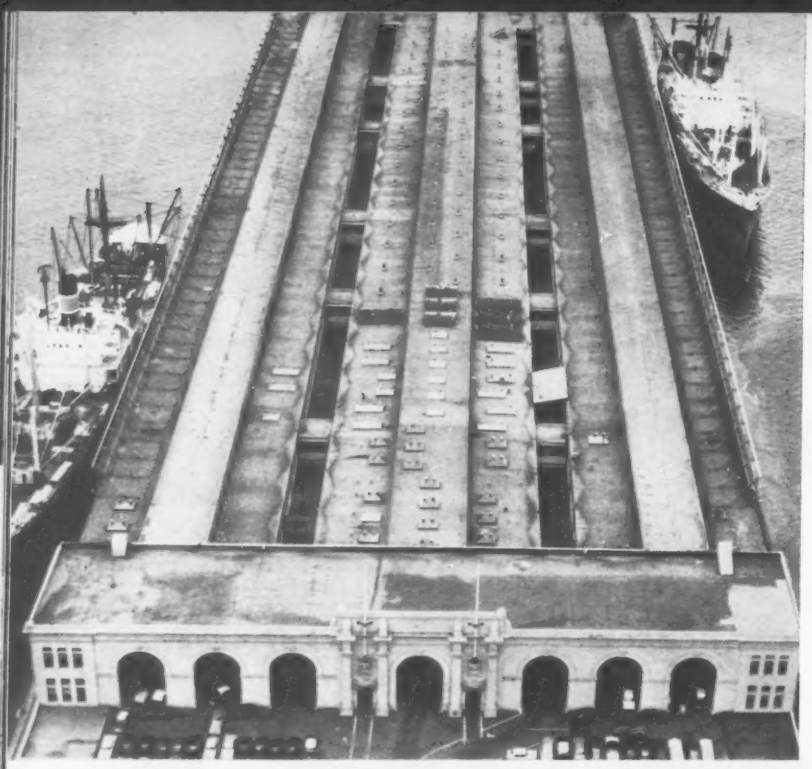
Fay, Spofford & Thorndike
Boston, Mass.

The times caught up with 46-year-old Commonwealth Pier No. 5, largest pier under one roof in Boston.

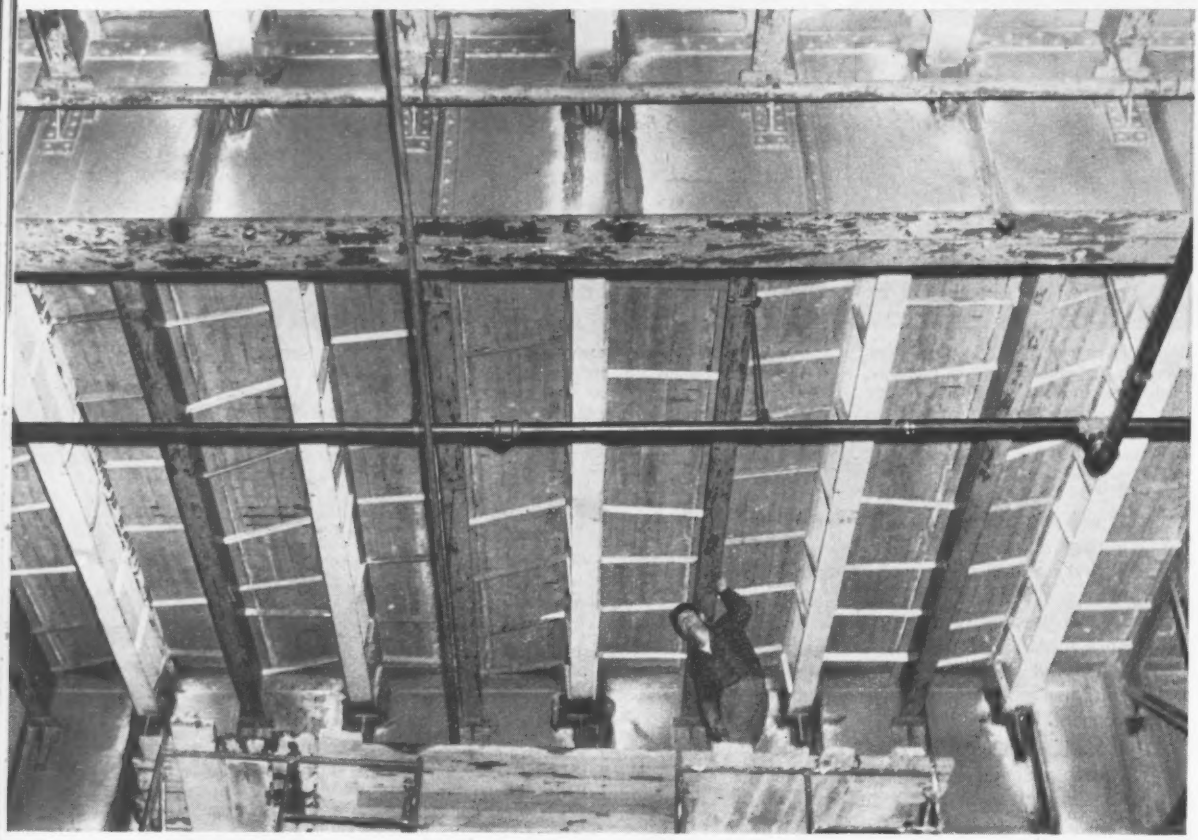
Either its use had to be curtailed or its second floor strengthened, because modern truck loads far exceed those it was designed for.

Consulting engineers made an analysis of the pier floor under AASHO H20 truck loading. This heavy loading was used because many of the heaviest trucks on the road today load on the pier, and the pier's length permits these trucks to accelerate as they do on highways.

The results of the analysis indicated that the steel framing under the concrete floor was still adequate for modern loading and was, in general, in excellent physical condition. Reinforcement in the concrete slab, however,



Boston pier, 46 years old, no longer could take modern loads.



New steel beams (light-colored), inserted between old ones, now reinforce the old deck.

Grout Simplifies Pier Job

would be in a condition of severe overstress under H20 loading. Furthermore, the physical condition of the reinforcing was poor in many areas. The engineers therefore decided to strengthen the slabs in the traffic aisles.

• **Floor layout**—Commonwealth Pier is 400x1,200 ft. It has 864,000 sq ft of covered space, of which about 10% is devoted to office and utility rooms.

The pier has two decks. At second-deck level it was originally divided into three sections by two light wells extending almost the full length of the structure. Bridges across the light wells at four locations provided access between sections. The light wells have now been removed, floored over at the second deck and roofed over at the main roof level.

A main traffic aisle extends the length of the center section, with access direct from the main concourse. Three transverse traffic aisles now connect all three longitudinal aisles.

The pier is a busy place; and its business had to go on during construction.

• **Alternate schemes studied**—Three methods of strengthening the traffic aisles on the second floor were investigated:

• Installation of an additional reinforced concrete slab in the traffic aisles on top of the existing slab.

• Removal of the slab in the traffic aisles and replacement with a new reinforced concrete slab.

• Erection of additional steel floorbeams between existing floorbeams, thus halving the span of the concrete slabs.

The engineers decided the third would be the most feasible method. Estimates indicated that inserting intermediate 16-in., wide-flange beams would be considerably more economical than a new concrete slab. It would be cleaner and quieter to erect and it would interfere less with business on the pier.

• **Working through a hole**—The engineers worked out this method:

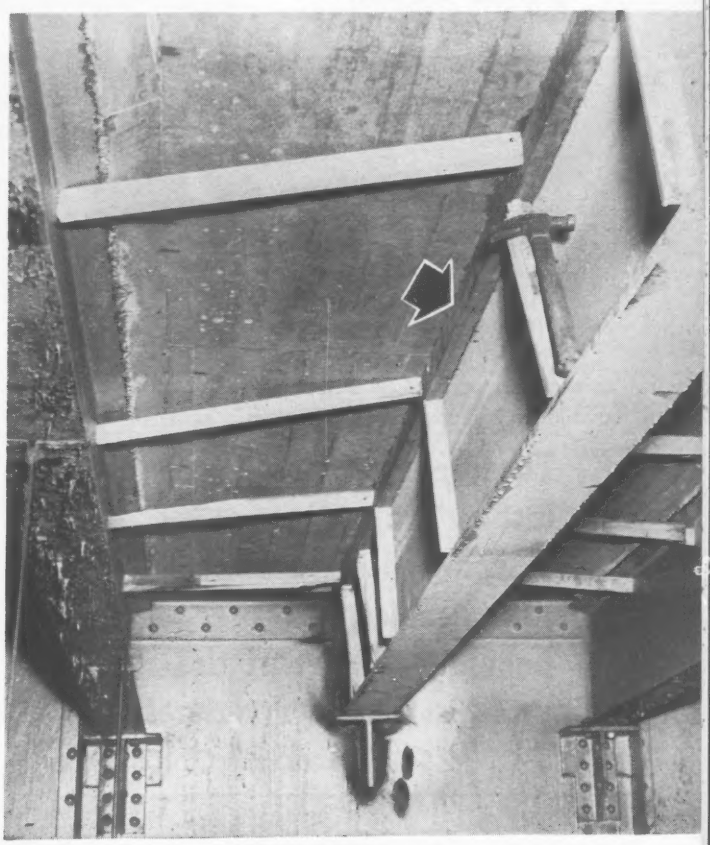
The contractor drilled a 4-in. hole through the second-floor slab on the longitudinal center line of each new beam at its midspan. From a small windlass on the second floor, which is 28 ft above the first deck, a ⅜-in.-dia cable was dropped through this hole and hooked into a lifting sling around a steel beam on the first floor or on a truck.

The beam was raised to within 1 in. of the bottom of the slab, pivoted on the cable and positioned on brackets previously welded to the girders to receive it. About 1,154 beams were placed in this manner.

It was difficult to determine before erection just what method should be used to make a tight bearing between the top of the beam and the bottom of the slab. The engineers finally decided to try grouting through the hole that was to be cored in the slab for lifting.

(*Story continued page* 46)

Piped through holes in floor . . .



Grout (arrow) transfers load from deck to new beam.

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Keep maintenance DOWN!

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If it is made of concrete, it is porous—if it is porous, thousands of gallons of water will enter and finally deteriorate the masonry—causing it to crack.

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STANDARD DRY WALL PRODUCTS, INC.
NEW EAGLE, PENNA. CENTERVILLE, IND.

. . . Nonshrink grout

The grout was to be made to flow toward both ends of each beam. It had to fill the space between beam and floor and it had to offset settlement and drying shrinkage of the mortar to fill the space tightly. Grouting equipment had to be easily portable and quickly set in position.

Full-size tests of the grouting method were made at Massachusetts Institute of Technology. The engineers chose Embeco grout made by the Master Builders Co., Cleveland, as the material for the test. Previous experience with it for grouting under paper-machine bedplates and other heavy machinery had proved its flow qualities and its ability to overcome shrinkage.

On May 16, 1955, when these experiments were being made, the cost of Embeco in truckload lots was $9.75 per bag. With a void of 1.18 cu ft per beam to be filled, the field-mixed grout cost about $6.63 for materials.

When the time came to grout, a concrete inspector was provided who supervised the operation carefully.

The forms required for this grouting were simple—for each beam, two 2x3's, 20 ft long, braced in place by eight vertical and eight horizontal 1x2's on each side.

Four carpenters and two laborers set up and stripped an average of 32 beams per day. The grouting crew consisted of three men on the second floor mixing and placing grout and one man on a high platform above the first floor. He had to watch the operation from below and signal the men above when to stop. A 6-cu-ft mortar mixer was used.

All materials, including water, were proportioned by weight. The water content of the sand was checked each day, so that the total water in the mix would always be 45.8 lb per bag of cement. The grout flowed smoothly to the ends of the beams, even when the grout space was pinched down by irregularities to as little as $\frac{1}{4}$ in. to $\frac{3}{8}$ in. in height.

The second-floor slab was returned to use nine days after grouting.

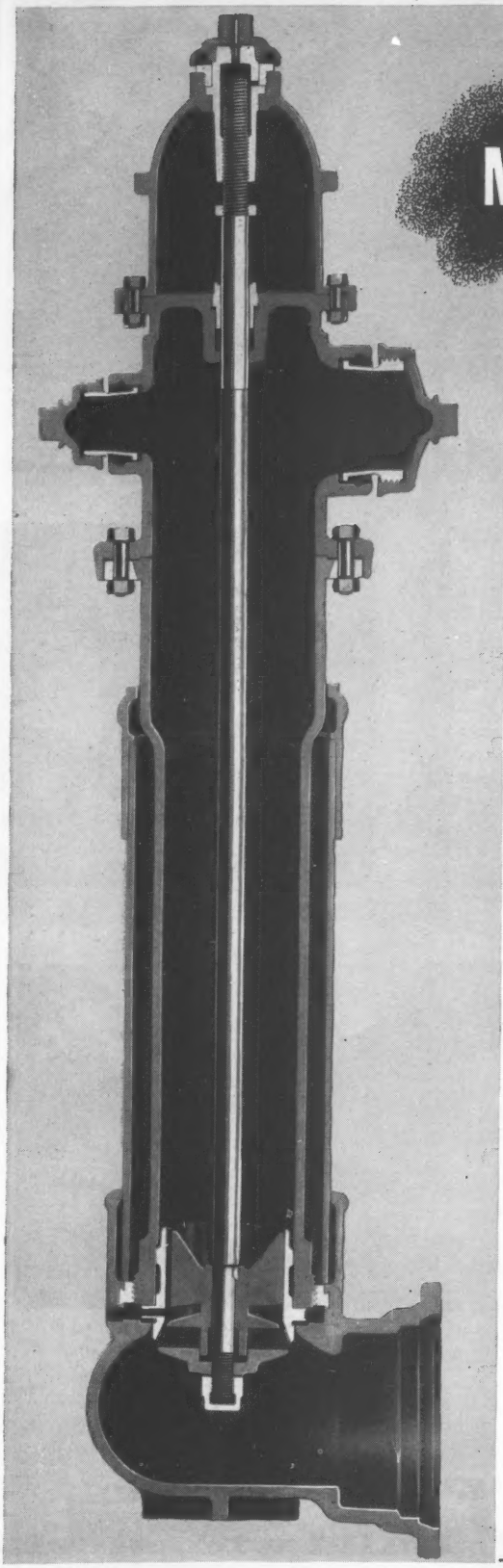
Fay, Spofford & Thorndike, of Boston, were the engineers. The prime contractor was James S. Kelliher, of Quincy, Mass.

Applied Psychology Brings Big Payoff

The four-man grouting crew working on Boston's Commonwealth Pier No. 5 grouted up to 30 beams per day—at first.

Then the contractor's superintendent told them if they would grout 60 beams per day they could go home when finished and still collect a full day's pay.

From then on they grouted 60 beams per day—and went home at 1:30 pm.



MATHEWS HYDRANTS

THE MATHEWS MODERNIZED HYDRANT SUPPLIES THE 4 FUNDAMENTAL REQUIREMENTS FOR EFFECTIVE COMMUNITY PROTECTION

and many other quality features, too

- Replaceable barrel for maximum efficiency—quickly replaced in case of accident without excavating
- Head revolves 360°; simply loosen bolts and rotate
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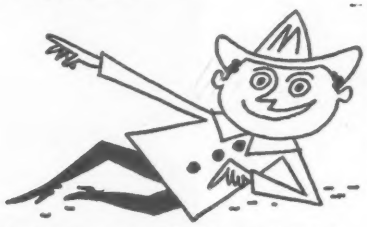
- Operating thread, protected by stuffing box plate, operates free of rust, sediment and ice

Also . . . Nozzle sections supplied with hose or pumper outlets as specified • Operating thread cannot be bent • Compression-type main valve prevents broken Mathews from leaking • Nozzle level can be raised or lowered without excavating • Bell, mechanical-joint, or flange-type pipe connections • Conventional or "O" ring packings



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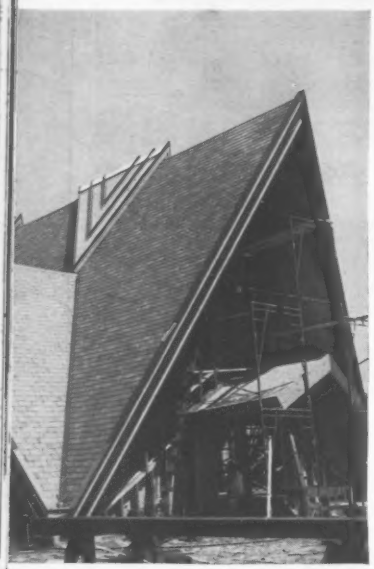
Residence in California

Design with steel...



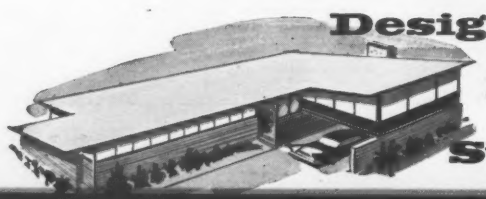
Church in California

Imaginative design.

Steel framing challenges the designer's imagination. It offers unlimited possibilities for bridges, schools, churches, houses, parking structures, industrial buildings. Structural shapes are readily adaptable to many architectural forms. When left exposed, many striking effects are possible.

Interior of house above

Library in New Jersey



Design with steel...

Build with steel...

Steel makes sense

Convention Center
in Nevada

Build with steel...

Steel frames go up quickly...
leading the way to
fast completion

Fast Erection.

Steel framing goes up faster than any other type of fire-safe material. It can be set in any kind of weather in which men can work. Other trades can move in quickly to speed the building's completion. Another important time-saver: high-strength bolts, which eliminate the need for field riveting.

High-strength bolts speed erection

Steel makes sense

Ample Supply.

Expanded production facilities by the steel industry (and by Bethlehem Steel in particular) assure you of an ample supply of all the structural shapes you need, when you need them. To all the reasons above why steel framing makes sense, add these: it's permanent; it's compact; it's adaptable; it keeps costs low; it's unsurpassed for strength.

Today, Bethlehem is able
to turn out nearly
3 million tons of shapes
each year. The supply is ample.

BETHLEHEM STEEL

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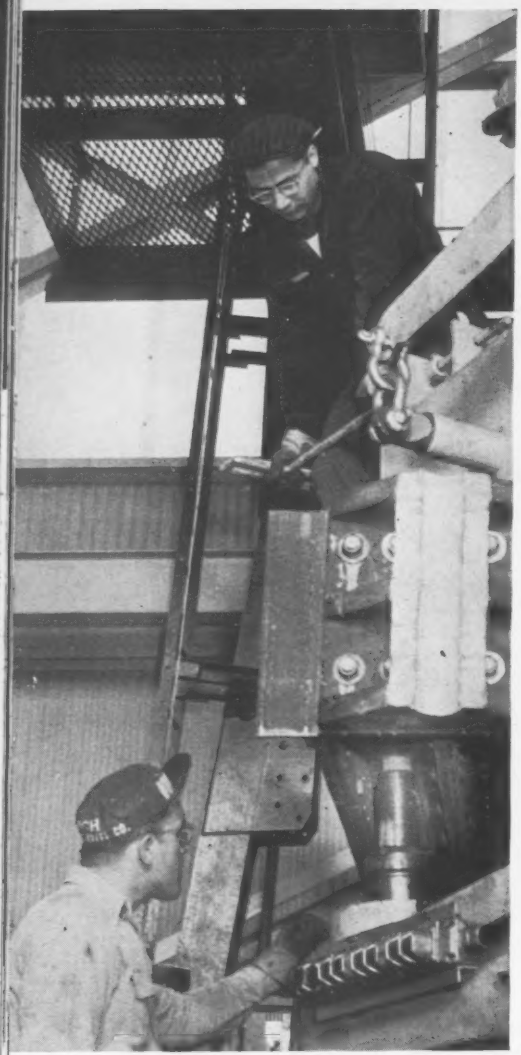
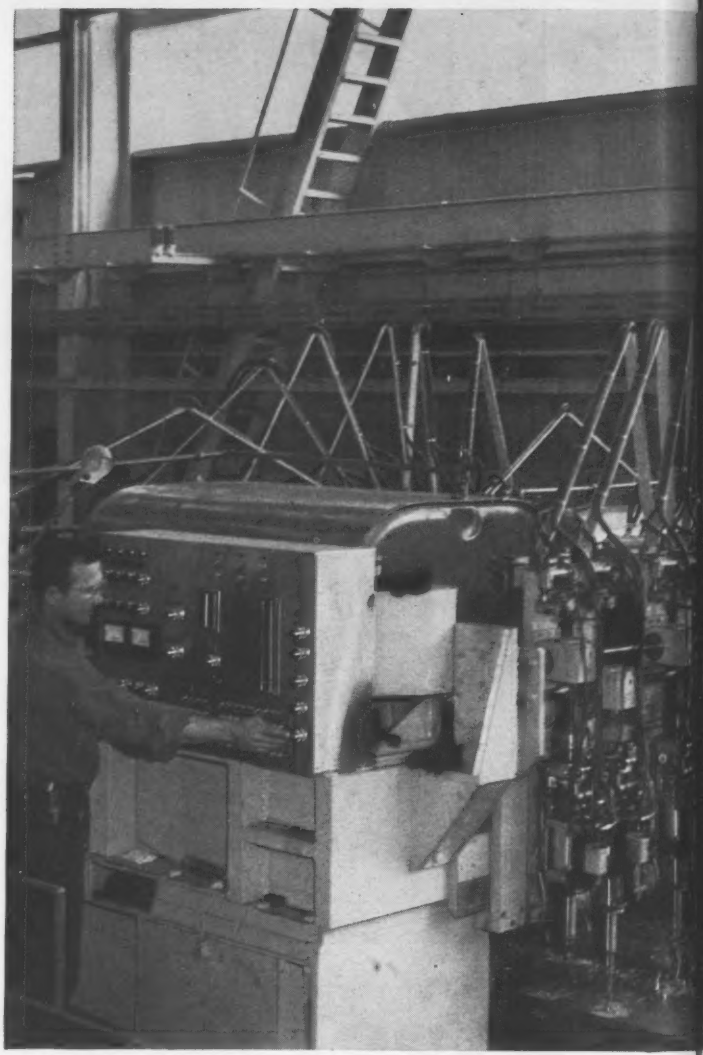
BETHLEHEM STEEL



Hydraulic system speeds riveting.



Drill does 18 holes at a time, has 27 flexible drill arms.

Here's How Fabricators Are

Steel can now be fabricated more quickly and at lower cost than before. A number of innovations in the fabricating process make this possible.

Four recent improvements are in the fields of drilling, welding, painting and riveting.

Three of the new processes were developed by fabricators themselves; the fourth was developed by a company that services the industry.

1. Hydraulic Riveting

Large steel assemblies are now being riveted at lower cost with hydraulic riveting components.

Lehigh Structural Steel Co., Allentown, Pa., has developed a hydraulic system consisting of a generator, a hydraulic cylinder assembly that can develop 75 tons and a high-pressure flexible circulating system.

The squeeze on the hot rivets is applied with a heavy steel yoke that permits the combination of reach, gap and pressure required to drive large rivets.

The equipment is maintained on a double gantry. This greatly reduces the physical effort of positioning the bull riveter. It has a track 134 ft long and 20 ft wide. The machine can drive hot rivets to 1⅛-in.-dia.

2. Multi-hole Drill

Lehigh has also developed a versatile machine that speeds up drilling time. Its new "space drill" bores 18 holes at a time in steel plates up to 3½ in. thick—and 9 in. heavy structural shapes.

The centipede-like machine has 27 flexible drill arms that range by remote control over a drill bed 12½ ft wide and 120 ft long. It also has two traveling speeds; low is 15.8 in. per min; high is 65 fpm.

One man guides the drill's operations from a pushbutton panel board attached to the machine. The board moves with the drill the full length of the drill bed.

Studs replace clips on joists for connecting bridging.

Steel is painted on the move.

Cutting Costs Four Ways

The machine nearly triples the drilling rate per hour of a single spindle drill, Lehigh says, and it eliminates the need for a mechanical layout.

3. Studs for Clips On Joists

Fabricators of long-span steel joists have cut fastening costs for lateral bridge members by using end-welded studs instead of hand-welded clips.

Punched holes in the head of the studs accomodate bolts for attaching cross bridging. A stud-welding gun with a positioning accessory welds the studs accurately at a 45 deg angle in the "V" of the joist's top and bottom chords. This assures proper alignment of cross bracing.

Studs of this type are applied three to four times faster than bridging clips during fabrication of "L" series steel joists.

4. Painting Steel on the Go

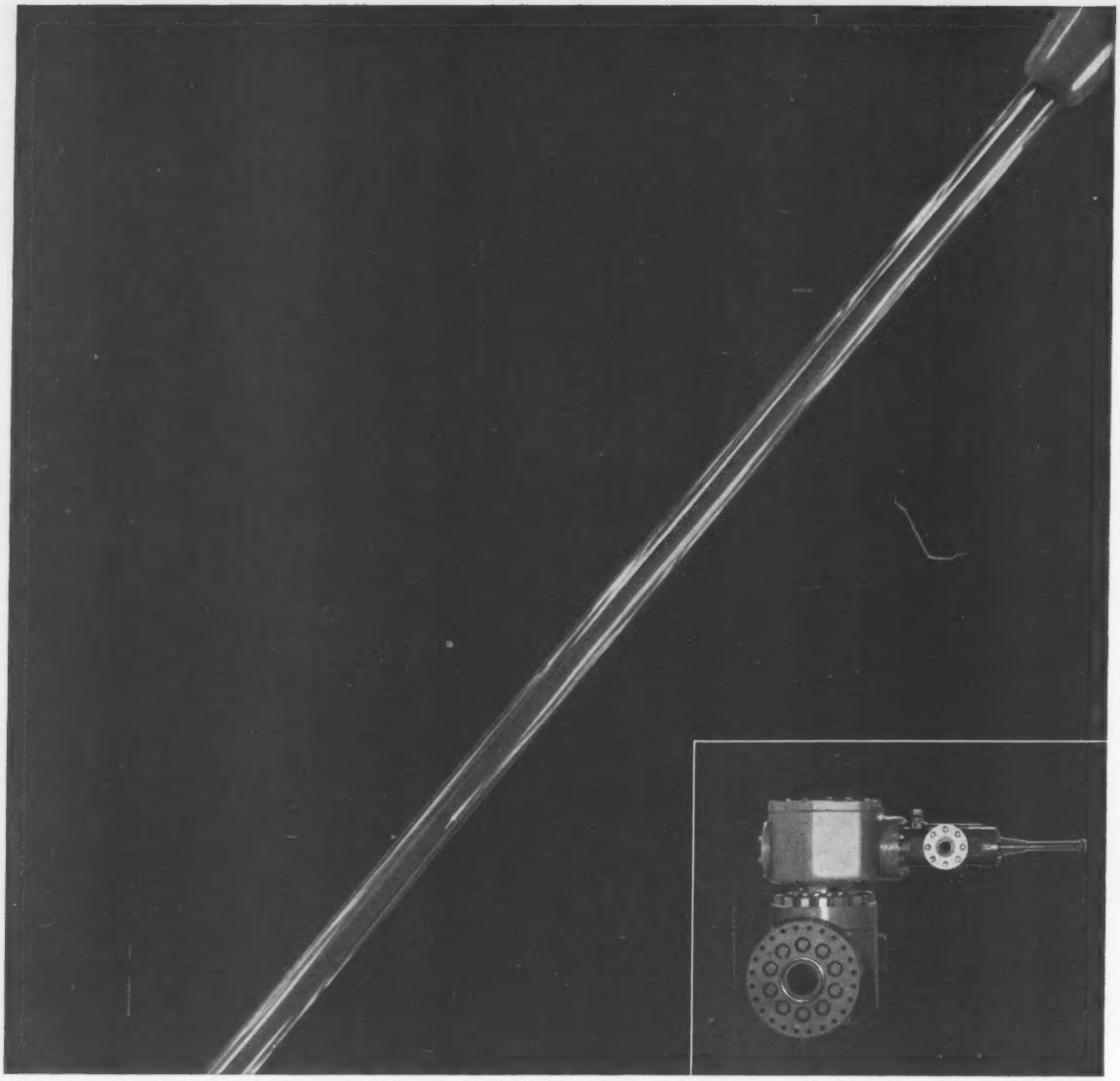
A conveyorized spray unit simultaneously transfers and paints steel enroute to the fabricator's storage yard.

The R. C. Mahon Co., Detroit, recently engineered and installed such a unit. It coats more than 200 tons of structural shapes during an eight-hour day on a mixed production schedule.

The unit is 400 ft long and 15 ft wide. It is designed to handle work as long as 200 ft and as short as 1 ft. It can support 1,200 lb of steel per lin ft and can process a 52-ton girder, 130 ft long, in about 30 minutes—saving about 2½ hours. Any steel truss less than 15 ft high can readily be put through the prime spraying operation.

Mahon production engineers say the unit already is chalking up preliminary production time savings of about 200%.

The steel work travels automatically past two sprayers, each positioned in staggered spray stations. Speed o fthe conveyor line generally is from 2 to 6 fpm.



Using stop motion, photographer Bernard Hoffman "freezes" a tiny jet of water. Discharged at high pressure, the stream is a solid, unwavering mass.

SPLIT-SECOND CONTROL OF TIME AND PRESSURE

Take the valve pictured above. This 10-inch, high-speed Rotovalve was designed for rapid flow control at a Langley Field test installation. It will fully open, or close, in one-tenth of a second against water under free-discharge conditions at 3,260 pounds per square inch pressure.

How much pressure is involved in your application? How fast must you operate? What's the volume? Dozens of questions must be considered to relate all the factors that influence a fluid control problem. They require specialized engineering . . . the kind you get from S. Morgan Smith.

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If you have a fluid control problem, SMS offers you a broad background of specialized valve engineering and application skills. To find out more about how we might assist you, contact your nearest SMS representative, or write to S. Morgan Smith Co., York, Penna.

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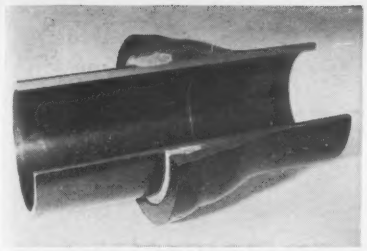
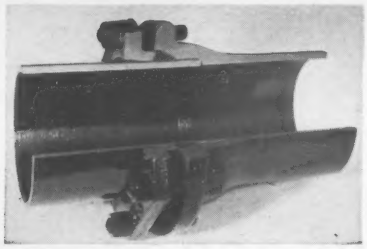
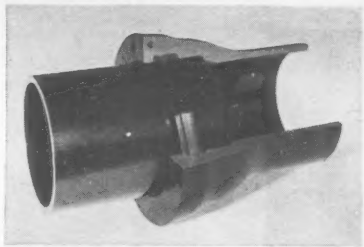


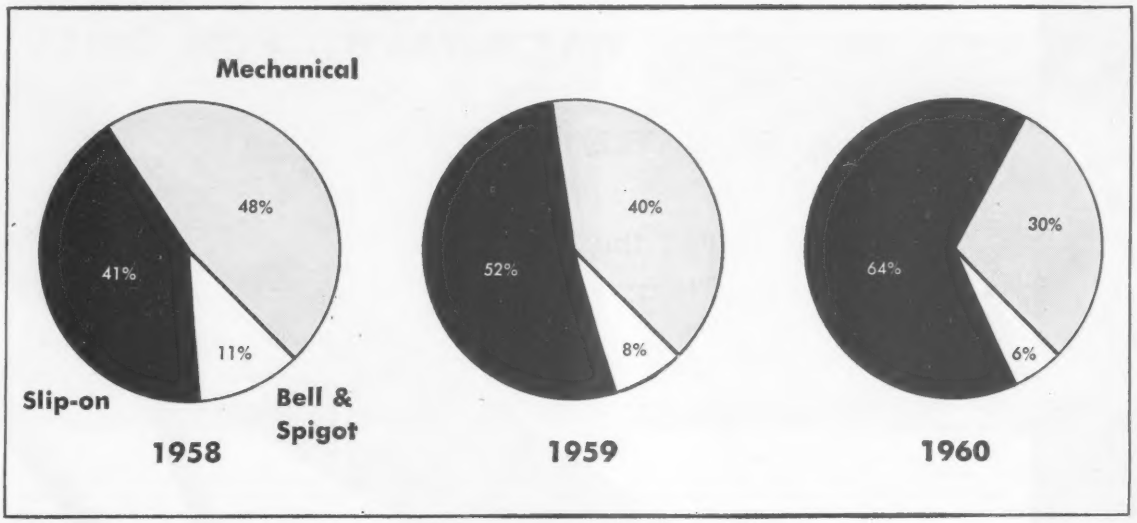
THREE JOINTS, bell & spigot . . .



mechanical . . .



and slip-on, compete. But . . .



Sales figures in cast-iron water pipe show . . .

Buyers Now Favor Slip-On Joints

Slip-on-joint water pipe has moved from nowhere to lead the pipe position in cast-iron water-pipe sales.

A survey just completed by ENR among cast-iron pipe manufacturers across the country indicates slip-on pipe will this year outsell both its chief competitors—mechanical joint and bell & spigot pipe. By way of contrast, slip-on-joint pipe didn't even figure in a similar survey four years ago (ENR, May 20, 1954, p. 42).

Cast-iron water-pipe sales figures late in 1958 showed that slip-on-joint pipe was running 41% of the total, mechanical joint 48% and bell & spigot about 11%.

Predictions for 1959 give slip-on-joint the edge—52% of sales to mechanical's 40%, a reversal of their relative positions last year. Bell & spigot sales are expected to drop to about 8%.

By 1960, manufacturers say, the growing popularity of slip-on-joint pipe will push its sales to at least 64% of total cast iron, water pipe sales, while mechanical joint and bell & spigot sales will drop to 30% and 6% respectively.

Slip-on-joint cast-iron pipe is generally manufactured in the same range of diameter as the other two types—2 to 48 in. or 3 to 24 in. Sizes most in demand are 6-, 8- and 12-in.-dia.

Dollar savings and fast installation are the major factors expected to insure bigger sales. Using bell & spigot as a base, material costs for slip-on-joint pipe average about 4½% more. Installed costs, however, run 13.7% less for slip-on.

Slip-on-joint also has a cost advantage over the mechanical joint, but not as much.

• **More advantages**—There are other reasons for the widespread popularity of slip-on-joints. According to J. B. Hill, assistant general sales manager of the American Cast Iron Pipe Co., Birmingham, Ala., slip-on-joint pipe:

• Needs less skilled labor for installation.

• Requires less equipment to install than bell & spigot pipe, and the same as or less than mechanical joint pipe, depending on size.

• Can be installed in muddy or wet excavations or even completely under water.

• Goes in faster and with fewer man-hours of labor.

• Requires fewer separate items of material per joint—to handle, transport, store and install.

There are other factors expected to result in savings. One of these is a decrease in overhead, as a result of the faster installation. Another is that maintenance expense of repairing joints on newly laid pipelines with slip-on-joints should be decreased or eliminated. Also, because of flexibility in the joint, it is believed there will be a considerable decrease in pipe breaks during temperature change periods.

In restrained hydrostatic tests cited by the manufacturers on the various joints, the slip-on type has held its own. Both the slip-on and mechanical joints have out-performed the pipe itself in tests to failure. Some of the pressures indicated were from as much as 2,750 psi for the 6-in. size to 1,010 psi for the 48-in. pipe.

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half the cost of the next most
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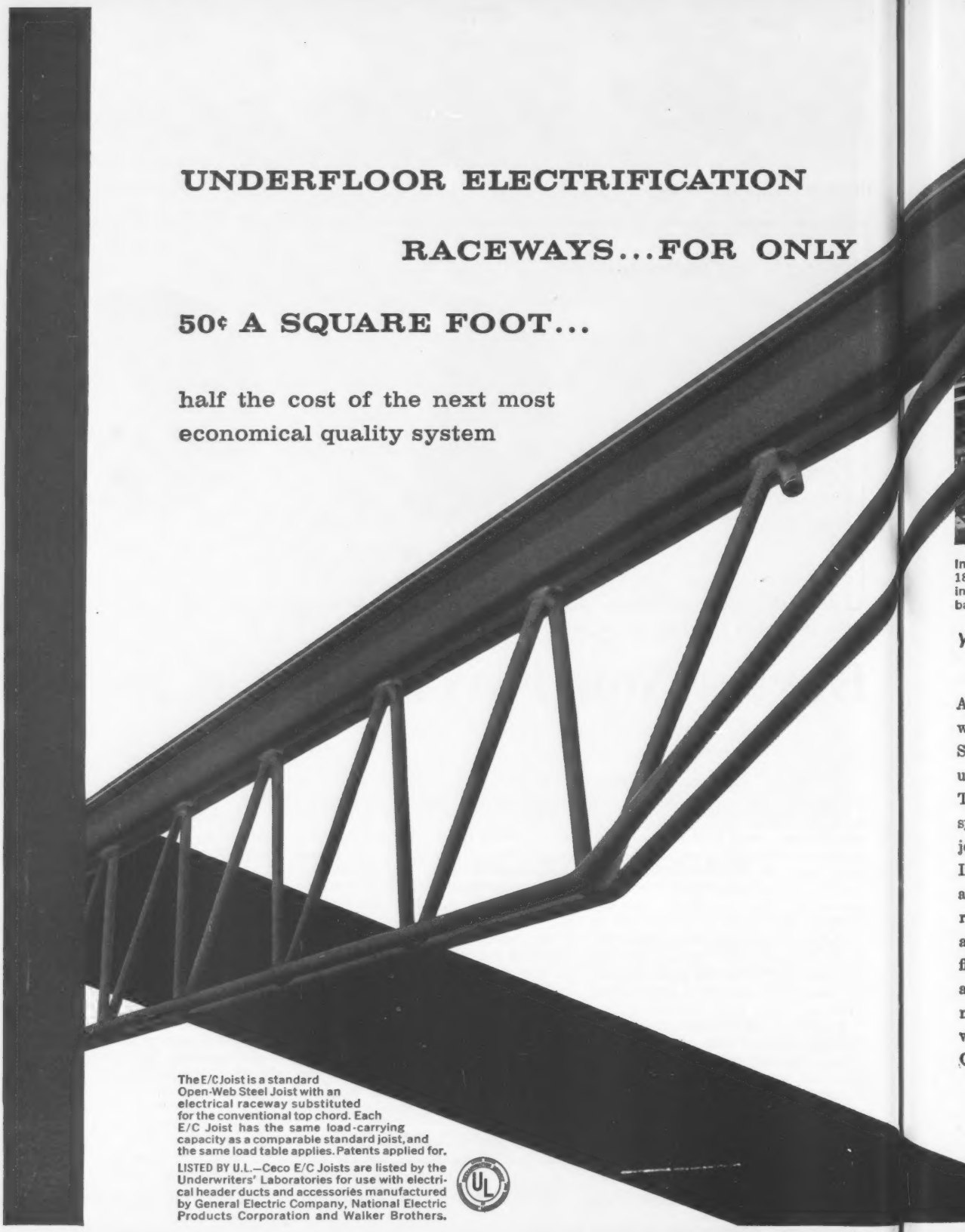


The E/C Joist is a standard Open-Web Steel Joist with an electrical raceway substituted for the conventional top chord. Each E/C Joist has the same load-carrying capacity as a comparable standard joist, and the same load table applies. Patents applied for.

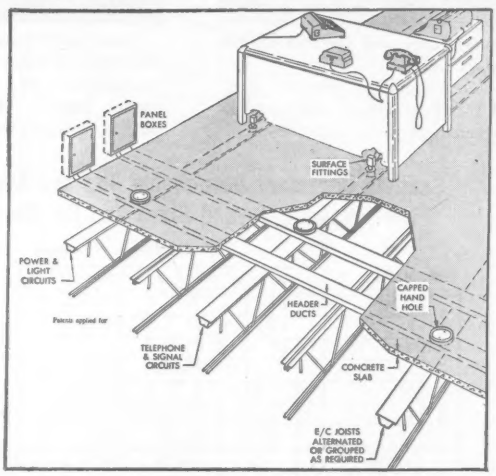
LISTED BY U.L.—Ceco E/C Joists are listed by the Underwriters' Laboratories for use with electrical header ducts and accessories manufactured by General Electric Company, National Electric Products Corporation and Walker Brothers.

In this case, pairs of E/C Joists are alternated with pairs of standard joists at 18″ o.c., providing a two-duct system at 6′-0″ o.c. The header ducts here were installed during a 4″ snowfall, demonstrating that construction can proceed in bad weather. For full particulars fill in the coupon below and place in the mail.

E/C Joists can be substituted directly for standard joists to provide as many electrical raceways as desired. The two header ducts, shown horizontally in the foreground, feed wires into the E/C Joists through the hand-holes in the center of the photograph.

You save with Ceco Electro-Channel Steel Joists because they serve a double purpose...

A new product that reduces costs and increases utility makes welcome news. Such a product is the Ceco Electro-Channel Steel Joist, which provides raceway systems for top-quality underfloor electrification for as little as 50¢ a square foot. This is half the cost of the next most economical quality system. The saving is possible because E/C Joists do two jobs . . . carry the electrical as well as the structural loads. Included with the Ceco system are header ducts, hand-holes and markers, installed—as well as the E/C Joist integral raceways. The 50¢ buys a two-duct system on 6′-0″ centers, and represents the cost over and above standard steel joist floor framing. Comparable savings are offered in three-duct arrangements. Call your Ceco engineer or send coupon for manual. Ceco Steel Products Corporation—Sales offices, warehouses and fabricating plants in principal cities. General offices: 5601 West 26th Street, Chicago 50, Illinois.



Electrical, telephone and signal wires can be run from the panel boxes down through the header ducts, into the top chord of the E/C Joist and up through the surface fittings to desks located anywhere on the floor. Whenever desks are moved, surface fittings can be placed along the joists to service the new positions.

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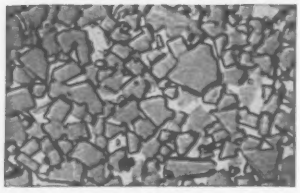
Longer bit life— with *new* Sandvik Coromant Bits



Sandvik Coromant Tungsten Carbide (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities —therefore stronger, longer-lived.

Low quality Tungsten Carbide (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used —as shown in the microphotos above. This means less wear, longer life and a better job.

2 The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels — the most widely used in the world — and Sandvik Coromant extension steel equipment.

Sandvik Coromant Detachable Bits are Available in the following Thread Sizes and Bit Diameters

Type	Thread	Available Diameters, in Inches														
		1⅛	1⅜	1½	1⅝	1¾	1⅞	2	2¼	2½	2½	2¾	3	3½	4	4½	5
SHOULDER	TAPER	x	x	x	x												
	F		x	x													
	113		x														
	H			x	x	x	x	x		x							
	115			x	x												
	D						x	x	x	x	x	x	x				
	K												x	x	x	x	
BOTTOMING	1" Rope				x	x	x	x		x							
	1¼" Rope						x	x	x	x		x		x			
	400						x	x		x		x					
	1½" Rope											x	x	x	x	x	
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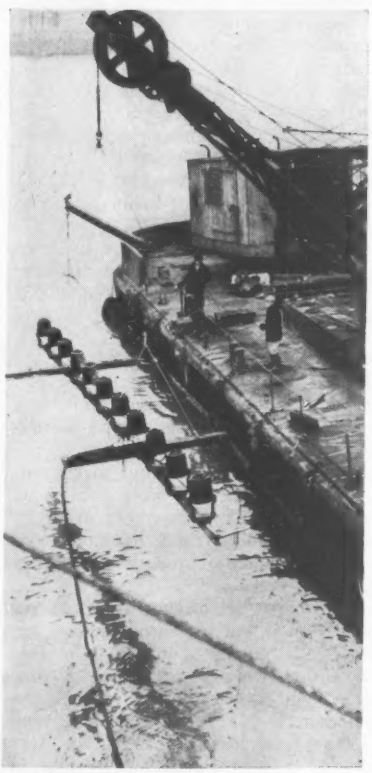
Breakwater (dotted lines) at England's Dover Harbor is invisible because . . .

A Wall of Bubbles Controls the Waves



BUBBLE DISTRIBUTOR section is a length of header pipe with bell-shaped plastic units that emit compressed air.

A method of controlling waves with compressed air is being used successfully at the entrance to the inner harbor of Dover, England.

The Dover installation, developed by Pneumatic Breakwaters, Ltd., London, consists of two parallel rows of air-bubble distributors placed across the 300-ft gap between two jetties. When incoming waves become heavy, air bubbles are released by the distributors at regular intervals.

As these bubbles rise to the surface, they disturb the harmonics of the waves and create a turbulence that sets wave energy working against itself. The result is a 50% reduction in the height of the waves.

The line of turbulence created by the ascending bubbles rapidly extends seaward, making a turbulent zone 20 to 40 yd wide. No wave can pass through this zone without losing a substantial amount of its force.

The reduction of waves by a constant discharge of air through submerged, perforated tubes has been attempted in the past. It has been successful, but it demands an expensive amount of air. Pneumatic Breakwaters, Ltd., says its distributor system makes the procedure economically feasible.

The distributors are bell-shaped polyethylene units mounted on legs on the sea bed. Air pumped into the distributor at the bottom enters a water-filled chamber 2 in. in diameter and 10 in. high. When the water is forced out of the chamber, the air bursts forth as a large bubble.

Placement of the distributors at 7-ft intervals has proved to be the most efficient arrangement. As the bubbles rise, they create vortexes of air and water that reinforce the deteriorating effect the bubbles have on the waves. Distributors of the size used at Dover produce vortexes about 7-ft in diameter.

The distributors on the first of the two lines at Dover Harbor are placed at 4-ft intervals. This line accomplishes wave reduction, but not as efficiently as the line with the 7-ft spacing.

Each of the two lines of the Dover pneumatic breakwater is made up of bubble distributors mounted on a series of 45-ft standard rails. For stability, two sleepers are mounted on each rail section, a third of the way from each end.

Compressors on shore supply air to the distributor sections through 1½-in. flexible pipes. Lead weights hold the pipes in position on the harbor bottom. The individual distributors get air from ½-in. tubes connected to the main hoses.

The time interval between bubbles is governed at the compressor controls. The interval is made briefer as the size of the waves increases. The average time between bubbles for the distributors at Dover is seven seconds. A peculiar aspect of this system is that air bubbles cannot create a zone of turbulence

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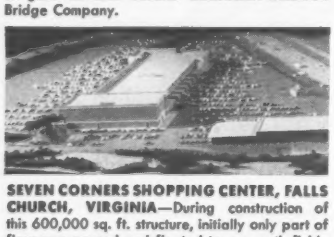
Typical **WELD-CRETE** Applications

GRANVILLE ST. BRIDGE, VANCOUVER, BRITISH COLUMBIA—One of the largest 8 lane bridges in North America. Here Weld-Crete was applied to bridge surface to bond cement dividing strips. Now, over 4 years later, bonds are as good as new. *General Contractor:* Dominion Bridge Company.



SEVEN CORNERS SHOPPING CENTER, FALLS CHURCH, VIRGINIA—During construction of this 600,000 sq. ft. structure, initially only part of floor was poured and floated to a smooth finish. Areas in which show windows would be added were poured as base slab only. Slab was coated with Weld-Crete. After store fronts were custom-built, delayed toppings of 1" to 1½" thick were poured with assurance of permanent bond to base slab. These toppings were then finished with asphalt tile, wood, or finish flooring of lessee's choice. Designed and constructed by The Kass Realty Co. of the Kass-Berger Organization under direction of J. Franklin Groff. *Concrete Contractor:* Moses-Ekco.

in waves less than three or four ft high.

Waves at Dover seldom exceed 12 ft in height or 80 ft in length. Larger waves might demand a different installation, such as three lines of distributors working simultaneously. One line in operation is usually sufficient.

The use of pneumatic breakwaters is being considered for a variety of situations where wave reduction is desirable. These include protection for offshore drilling rigs, exposed tanker jetties, marine construction and seaplane runways.

Pneumatic Breakwaters, Ltd., uses polyethylene for all distributors and air hoses. Steel rails with sleepers were used at Dover only because the installation was intended as an experimental, temporary one. For a permanent installation the firm would use either a reinforced concrete frame or a steel beam heavily treated with an anti-corrosive compound.

The Dover breakwater uses six 500 cfm compressors borrowed from the British government. The compressors' 100 psi ratings are brought down to 30 psi, because high pressures are not required. Single-stage compressors operating at a better load factor would be used in a permanent installation.

The cost of setting up the breakwaters in England is about $85 per ft, according to Pneumatic Breakwaters, Ltd. This is exclusive of compressors. Operating expense for one line is about $2 an hour.

Iraq Lays Development Plans

New Administration picks up where old regime left off; roads, housing and industry get top priority

Iraq's reconstituted Development Board is preparing two new plans to replace the old regime's interrupted $1.4-billion five-year plan.

Mohamed Hadid, acting Minister of Development, says the first of these, an emergency, stop-gap arrangement, is now being rushed through board committees. It will be replaced eventually by the second plan—a long-range development measure.

All projects of the former Board that have not been formally and finally signed into contracts have been put back for re-appraisal before being included in future programs. But the Ministry of Development has promised to honor all commitments accepted by the former board in the shape of signed contracts.

In drawing up the new plans, the Board expects to retain the services of most of the foreign consultants and experts already working with it and may call in additional outside advice.

Yugoslavia and Japan have already formally offered technicians to the Board. And it is believed the current trade and economic talks between the Iraqi authorities and missions from the Soviet bloc countries include proposals for technical aid.

Housing, industry and road development will have priority over irrigation projects in the new plans. Highway development, which was a failure in the old regime, reportedly tops the list of projects in the emergency plan.

Thermal power projects in the north, central and southern part of Iraq are being carried out according to contracts already signed, both for the main grid system and for individual municipal power stations. The first generating set at the Development Board's main Baghdad power station is due in service in a few weeks.

Irrigation plans for the south will be carried out unchanged; but those in the mountainous headwater-country in the north will be fully re-evaluated before the issue of any new tenders.

Mr. Hadid says tender procedure will remain unchanged for the time being. But, he says, new tenders will have provisions for company financing of the schemes.

Tender documents now are available behind the Iron Curtain in the new Iraqi diplomatic missions in Prague and Moscow.

• **Old board criticized**—Mr. Hadid says the old board did not serve the "primary needs of the people of Iraq as a whole." The projects were "formulated to benefit the minority."

Mr. Hadid further claims that "both in the formulation of projects by some consultants and in their execution by some contractors, there has been conclusive evidence of many abnormal activities."

The personnel of the Board's executive council and technical sections was drastically purged soon after the July revolution, when Fuad Rikabi, 30-year-old engineer, became Minister of Development. Mr. Rikabi has since been demoted for being a partisan of Arab union. The new faces he brought in are now being replaced by partisans of the more left-wing elements in the present administration.

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OLD PURSEWAD HATES TO PART WITH ANYTHING... ESPECIALLY OLD DRAWINGS!!
JUST PUT A LITTLE MORE TAPE ON THESE... AND THEY'LL LAST FOR YEARS!!
I CAN'T DRAW ON THESE THINGS...THEY'RE ALL TAPE NOW!
I'VE HAD MY GLASSES CHANGED 4 TIMES AND I STILL CAN'T READ 'EM
THE ONLY THINGS THAT SHOW UP ON THE BLUEPRINTS ARE TAPEMARKS AND CREASES
IT'S GOOD THE GUYS IN THE SHOP HAVE GOOD MEMORIES
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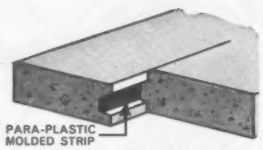
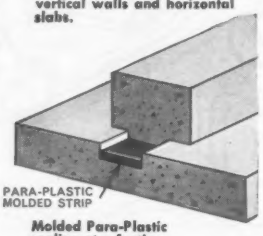
Molded Para-Plastic is a durable, elastic compound, composed of rubber, asphalt and other materials, molded into a rectangular strip. Properly installed, Molded Para-Plastic will bond securely to concrete to form a resilient and moisture-tight seal of the joint.

Because it presents sealing surfaces on all sides, Molded Para-Plastic is especially effective in sealing keyed construction joints and foundation footings. Not recommended for use in joints where the surface of the material is exposed, or when hydrostatic pressure is present. Available in various sizes with thickness ranging from ¼" to 1" and widths from 1 to 12 inches. Standard length is 5 feet.



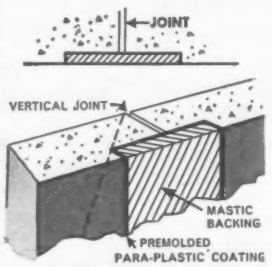
Keyed construction joint in vertical walls and horizontal slabs.



Molded Para-Plastic sealing at a footing.

PARA-LATERAL STRIP

Consists of a rigid mastic backing material coated on one side and two edges with a Para-Plastic rubber-bituminous sealing compound which bonds firmly to the concrete after it has set up, to form a watertight seal. Designed for use in vertical and sloping joints in concrete retaining walls, abutments, wing walls, foundation walls, tunnels, etc., where backfilling against one side of the structure requires a seal to prevent seepage of ground water through the joint to the exposed side. Available in widths of 4", 5", 8", 12", and 13"; standard length is 5 feet.



Application of Para-Lateral Sealing Strip to rear face of wall at joint.

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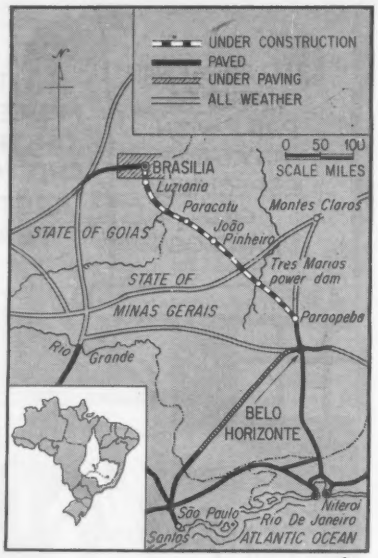

New Road Is Being Pushed To Brazil's New Capital

The Brazilian congress voted in October 1957 to move its federal capital inland. And the new City of Brasilia started to take shape.

The same legislation called for a highway to connect the city with the country's existing network of paved roads. And it's taking shape, too. The quickest way to make the connection was to run the highway to Belo Horizonte, which is a focal point for paved roads to a number of industrial centers (see map).

The new road will be 379 miles long. It is replacing a 900-mile trail that zigzags along between the two cities.

Cost is estimated at $36.3 million. Deadline for completion is April 21, 1960—the day the government plans to dedicate the new capital city.

The road is going in as a soil-stabilized base with a 1-in.-thick bituminous wearing surface.

More than 140 miles are now graded; and more than 60 miles are now stabilized, ready to be surfaced.

Pushing the road ahead is one of the biggest fleets of construction equipment ever gathered for a single road project in South America. Major pieces include: 68 crawler tractors, 52 scrapers, 65 self-loading scrapers, 5 shovel excavators, 14 bucket loaders, 28 power graders, 35 utility tractors, 135 dump trucks, 37 sheepsfoot rollers, 14 pneumatic rollers and 10 soil mixers.

Bituminous surfacing equipment has not yet arrived at the contractors' camps.

This great performance story began more than two years ago— and it's getting better all the time!

More than 50 Allis-Chalmers HD-21's are handling Toquepala's toughest jobs for Utah Construction Co. and Morrison-Knudsen Co., Inc.

Working up to 14,000 feet high in the Peruvian Andes, to develop a large mining project for the Southern Peru Copper Corporation, these tractors have been constructing roads . . . building railroads . . . preparing sites for entire new towns.

They've faced some of the toughest conditions in the world . . . rock, sand, dust, cold and high altitude all rolled into one. After two years of round-the-clock operation, these machines have piled up an outstanding performance and on-the-job record.

The Toquepala story is another good reason why you should have all the facts on the new HD-21. Across America, as in the Andes, leading construction men are discovering that the HD-21 is the long-life, big-production crawler tractor they've been looking for. See your Allis-Chalmers construction machinery dealer. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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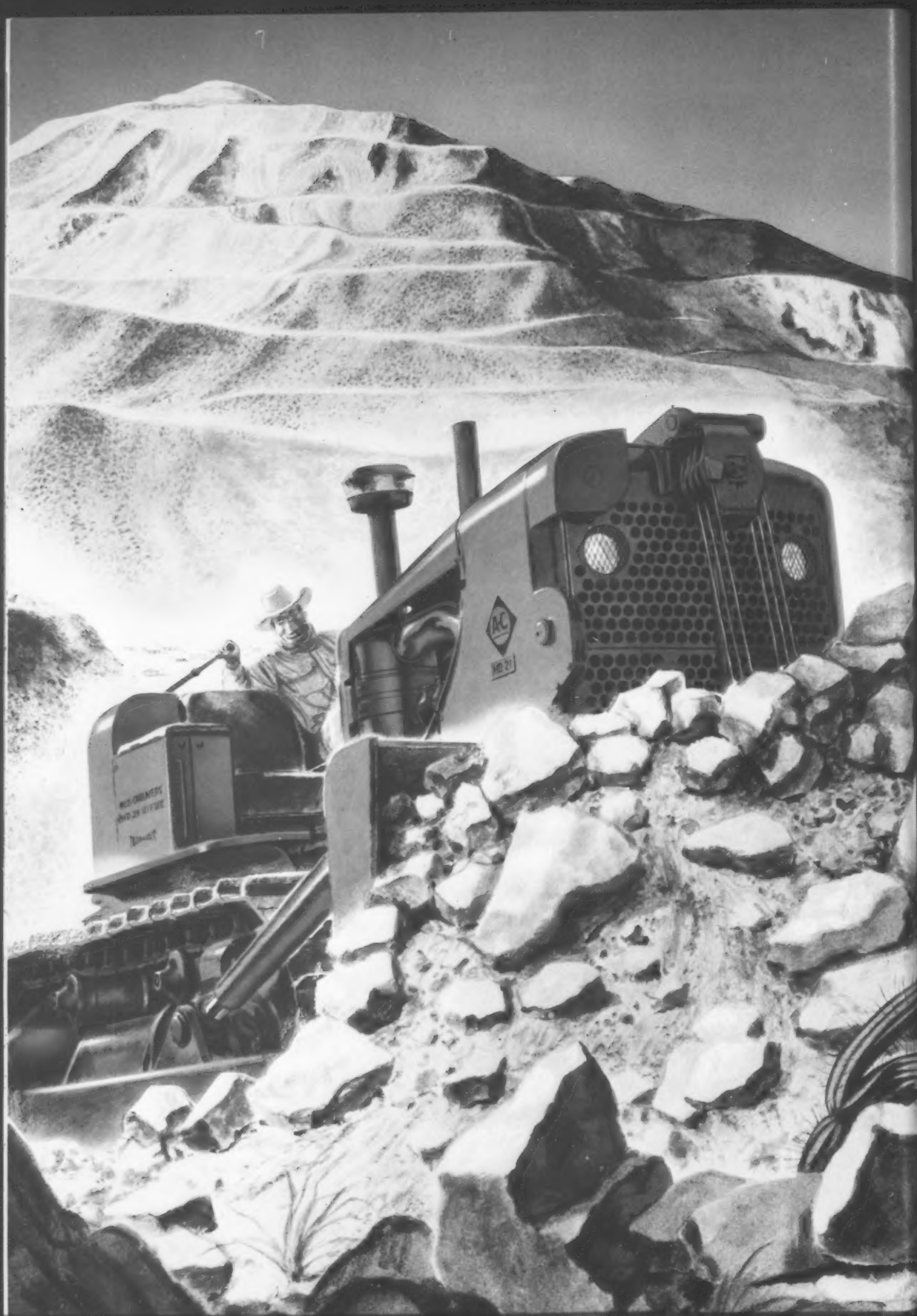
...power for a growing world

CRAWLER TRACTORS • MOTOR GRADERS • MOTOR SCRAPERS • TRACTOR SHOVELS
PULL-TYPE SCRAPERS • MOTOR WAGONS • UTILITY TRACTORS • POWER UNITS



Working on New Frontiers high in the Peruvian Andes

Mining specialists . . . men of construction . . . and a great fleet of giant Allis-Chalmers crawler tractors are changing a remote, mountain-top desert into a modern mining center.

Toquepala (*pronounced Toe-kay-páh-la*) is its name—a wilderness hidden deep in the ancient land of the Inca Indians, so bleak and devoid of rain it's truly a mountain-top desert. There, 11,500 feet above sea level, one of the biggest mining projects in history is now under way.

Among the first machines moved ashore at the start of this venture were big Allis-Chalmers tractor-bulldozers, and today they're part of the team that is breaking through the barriers to Toquepala. To span the 100 miles from the mine to the nearest seaport, these giant tractors are pushing aside sand and rock to help build a network of roads and a railroad . . . and they're biting into mountainous terrain to level a site for a new town of 10,000 people.

Thus, the might of modern construction machinery is helping to unlock the treasures of Toquepala, considered inaccessible just a few years ago. And when the ore is ready for processing, 14 huge Allis-Chalmers mills will start grinding up this 400-million-ton mountain of copper ore at the rate of 30,000 tons a day . . . free the valuable mineral from the waste and prepare it for concentration, smelting and refining. Then, Toquepala will be one of the world's great copper mining centers, and long-range needs for this vital metal will be supplemented by a new source of supply.

From trail blazing to processing, this mammoth project typifies Allis-Chalmers service to the mining industry—through an unusually wide range of construction, power and processing equipment. It also typifies Engineering in Action . . . bringing better living to more people wherever it goes. ALLIS-CHALMERS, GENERAL OFFICES, MILWAUKEE 1, WIS.

Toquepala is a project of the Southern Peru Copper Corporation, which is stripping more than 120 million tons of overburden to reach the actual ore deposit at the mine. Major construction work for the roads, railroad and town site is being handled by two famous American contractors, Utah Construction Company and Morrison-Knudsen Company, Inc.

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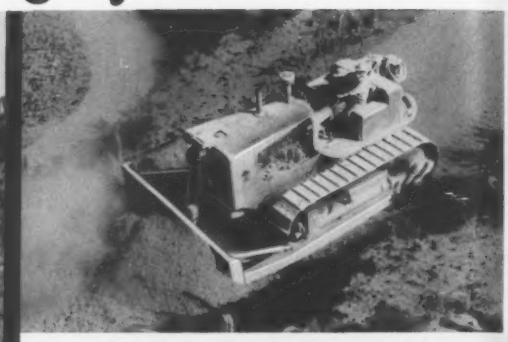
ALLIS-CHALMERS

...power for a growing world

At sea level . . . or 14,000 feet up

Allis-Chalmers HD-21's are the tractors for your tough jobs

Big Allis-Chalmers tractor-dozers cut the rocky, mountain country to size to develop a town site.



Men and machinery conquer the mountain-top desert . . . push aside rock and sand to build access roads.

HD-21 — 225 net engine hp; torque converter drive; 56,260 lb (approx. as shown)

You, too, can have the outstanding performance Utah Construction Company and Morrison-Knudsen Company, Inc. are getting from the more than 50 Allis-Chalmers HD-21's at Toquepala. Call your Allis-Chalmers dealer now. He will demonstrate the HD-21 on your job at your convenience.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

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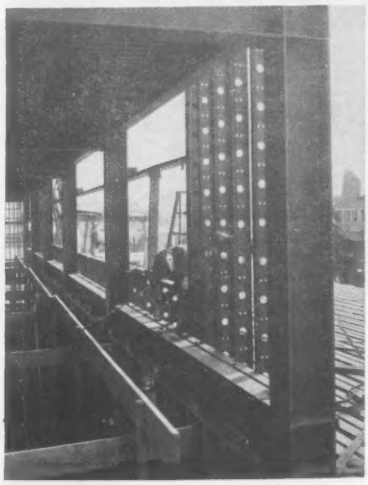

Money Saver

Steel studs help designers hold down school job costs

A tight budget led designers to use nailable steel wall studs as well as a structural steel frame and cellular steel decking for the Santa Fe Grammar School in Oakland, Calif.

The 42,000 sq ft of floor space in the two-story building cost only $15 per sq ft. Other reasons for choosing these materials: They provided speedy erection, long spans and interior design flexibility needed for changing classrooms to fit the school's expanding needs.

With the structural steel skeleton, the designers used a system of nailable steel studs. These were welded to the building frame.

Studs were cut to the proper length in the field by a power saw with a standard carborundum blade.

Construction was speeded by nailing 8/32 in. thick weatherproof insulation panels directly to the studs. Next, on the outside, came wire lath and plaster. Inside, the exterior walls were covered with steel mesh and then plastered.

All interior walls of the structure are non-loadbearing partitions composed of wood studs, gypsum or plywood facing.

Hollow, light-gage steel decking installed on the second floor and roof carries a 2½ in. concrete fill.

Architects are Harry A. Bruno and Edward D. Cerruti of Oakland, Calif. Frank McClure is the structural engineer. Bethlehem Pacific Coast Steel Corp. furnished the 148 tons of steel required. Herrick Iron Works of Hayward, Calif., fabricated and erected the steel.

Blasting in a Tile Factory

Engineers used milli-second delay blasting to demolish heavy concrete bases inside a Canadian tile factory. They were able to break up the obsolete machine foundations without stopping production or shifting nearby tile stocks.

The bases, both 6 ft high, were located in a building next to the storage and shipping room of Building Products, Ltd., Hamilton, Ontario. One base measured 5 x 8 ft, the other 7 x 19 ft.

A demolition crew drilled nine holes through the bottom of the smaller base. These were 1½ ft apart and 4½ ft deep. Engineers loaded each hole with half cartridges of 40% Forcite timed to go off 25 milli-seconds apart. A steel blasting mat covered the base.

Workmen 100 ft away reportedly didn't even know when the blast was set off; stocks of finished tile 25 ft away didn't budge.

The second base was taken out in three stages. Twelve holes at a time were drilled, loaded and shot in series the same way. The controlled blasting broke the bases into pieces small enough to be carted away.

Robert Hanlon, Building Products' quarry foreman, and his assistant, Clinton Bradford, worked out the blasting method with David Brown, technical service representative of the explosives division of Canadian Industries, Ltd.

State Uses Rock Asphalt For 'Deslicking' Roads

The Kentucky State Highway Department is buying $253,500 worth of rock asphalt for "deslicking" roads. Highway department officials say the material is unbeatable as a deslicking agent on lightly traveled routes.

Rock asphalt costs four times more than crushed limestone or slag, which is usually used. But department engineers say it gores farther.

Waterborne Mower Cuts Weeds

The Corps of Engineers Detroit district found a neat answer to removing high marsh grass and weeds that would interfere with a possible survey for a new ship channel.

The Corps hooked an ordinary hydraulic mower to one of its amphibious "Weasels" that can go on marshland where heavier cutting equipment would bog down.

The proposed shipping channel runs through the marshes of St. Clare Flats off Hansens Island, Mich. Spongy ground keeps ordinary equipment from being used to clear sight lines.

The Weasel, with its tracks, moves easily over this terrain. In a test run, the attached mower, similar to those used in highway maintenance, has successfully cut down the 15-ft-high growth that would make use of surveying instruments impossible.

USERS OF **NEW**
ROEBLING HERRINGBONE* WIRE ROPE
HOLD THESE TRUTHS TO BE SELF-EVIDENT...

That Herringbone is the most practical and *needed* wire rope development to come along in years.

Herringbone, the regular lay and Lang lay rope, is actually two-ropes-in-one rope. Thus, the qualities that make these two ropes *good* ropes, combine to make Herringbone *excellent.*

HERE'S WHY:

The steel core of Herringbone provides the *ideal* support for the two pairs of Lang lay and one pair of regular lay strands used in its construction. In addition, the outer wires are heavier for extra abrasion resistance, and good flexibility is maintained by the finer wires inside. This combination of features enables Herringbone to give *longer service* in most applications.

Herringbone has been used on a wide variety of excavating equipment and tough hoisting jobs with impressive results. Its applications are practically unlimited on installations which call for all-steel ropes and on many where fiber core ropes are now being used. Another of Herringbone's added attractions is the fact that it eliminates the necessity for stocking Lang lay rope for one job and regular lay for another.

Your Roebling Distributor has Herringbone right now. He has, also, copies of a brochure describing Herringbone, the newest Roebling Star Performer. If you wish, write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for literature and anything you'd like to know about Herringbone.

*Reg. App. For

ROEBLING

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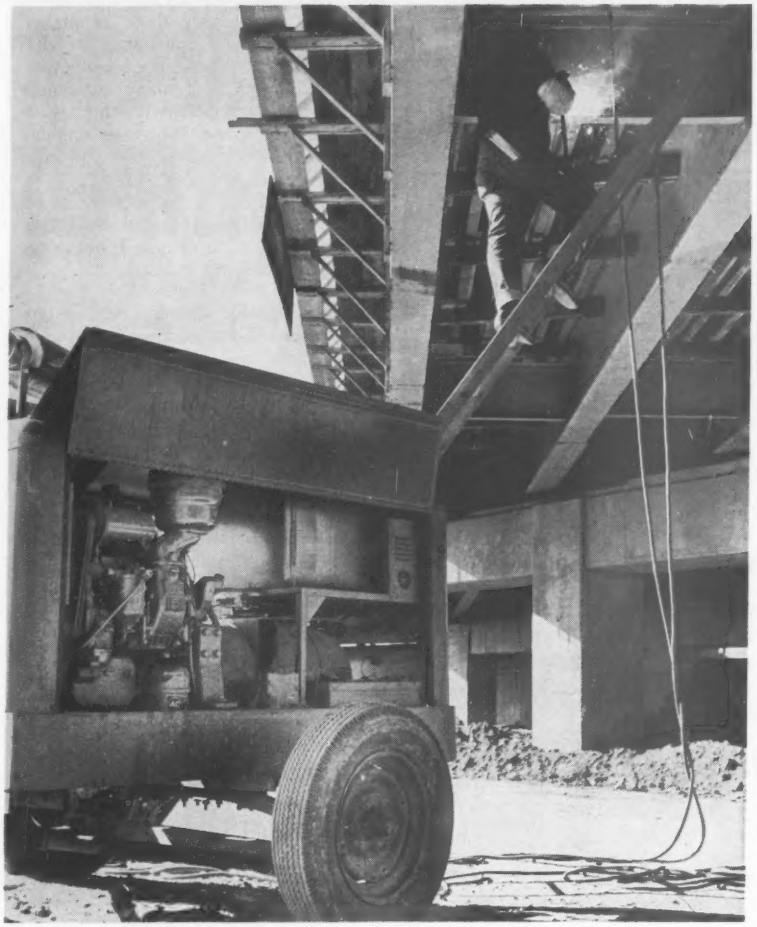
Subsidiary of The Colorado Fuel and Iron Corporation

HERRINGBONE
WIRE ROPE



Portable welder holds smallest of new line of diesel engines.

GM Adds 8 New Diesel Engines

Eight new basic units have been added to its line of 2-cycle diesel engines by the Detroit Diesel Engine Division of General Motors Corp.

The complete line now has a power range of 20 to 1,650 hp, compared to the previous range of 30 to 893 hp.

The line includes 13 basic engines and six multiple units including single, multiple and turbopowered engines.

The expanded line is significant to road builders, and other segments of the construction industry, for this reason: It can now meet exacting power requirements in the lower horsepower ranges more closely than before. And it can supply, in compact packages, the greater horsepower required for bigger earthmovers and other construction equipment.

The new engines offer high horsepower in a small, lightweight package, according to the manufacturer. Other features include outstanding fuel economy (as low as 0.4 lb per brake horsepower hour), maximum interchangeability of repair and replacement parts, and a complete range of horsepower integrated with other GM diesel engines.

• **Three-year program**—The eight new engines were developed over a three-year period. During that time over 75,000 hours of laboratory development and field testing, and over a million man-hours of engineering and perfecting operations were expended in the program.

The new engines include four single "V-type" engines in the "71" series, ranging from 252 to 675 hp. The other four, known as the "53" series (53 cu in. of displacement per cylinder) range from 20 to 195 hp.

• **Five V-type engines**—Five of the new engines are V-type. Four are additions to the "71" series. Their maximum horsepower ratings are: 6 cylinder (6V-71), 252 hp; 8 cylinder, 334 hp; 12 cylinder, 504 hp; and 16 cylinder, 675 hp.

By twinning two 16V-71 engines together a maximum rating of 1,350 hp can be obtained. And, when turbopowered, this 16V-71 twin engine will deliver 1,650 hp maximum, according to the manufacturer. The 12V-71 can also be doubled in size to operate as a twin, with 1,008 hp maximum.

Three of the new "53" series are "in-line" engines of two, three and four cylinder units. Their power ratings range from 20 hp to a maximum of 130 hp. The fourth engine in this series is a 6-cylinder "V-type," of 195 hp, maximum.

The new engines are shorter and require less space than those of comparable power ratings in GM's other lines of diesel engines. For example, the new 334 hp 8V-71 engine is 15 in. shorter and 2 in. narrower than the 335 hp 6-110 "in-line" engine.

This space-saving is important in construction equipment such as scrapers, graders and tractors. It means shorter engine compartments, resulting in better visibility for the operator and money-saving reductions in the length of frames and engine hoods.

• **How it started**—In the past 20 years the Detroit Diesel Division has produced over 78 million horsepower, with over 1,800 power applications.

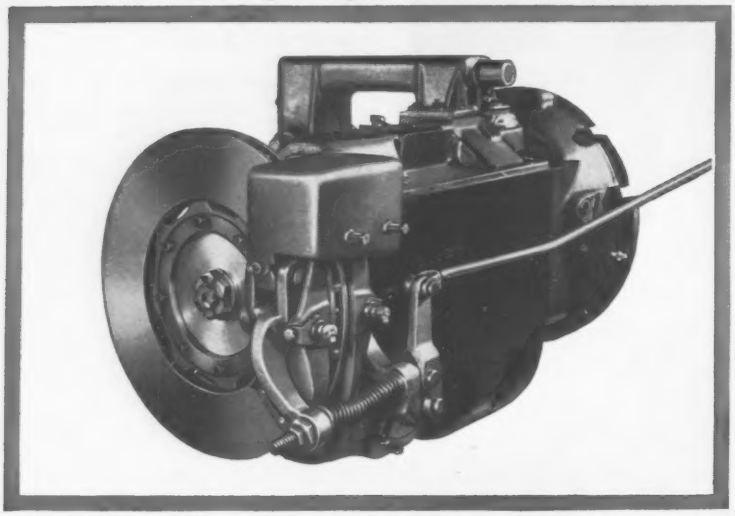
In 1955 Detroit Diesel realized that the earthmoving industry wanted both greater economy and more horsepower than could be furnished in single engines.

The first basic requirement was that a broad power range be covered without turbocharging, but that all models could be turbocharged when the operations required it.

The two stroke (cycle) uniflow design engine was the choice of GM's design engineers years before because it had three major advantages: more horsepower per cubic inch displacement; higher horsepower to weight ratio; and higher horsepower to physical volume ratio.

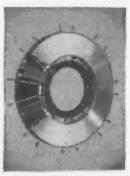
There were three principal ground rules in developing the new line of en-

You Get Positive Protection Against Runaway or Parking Accidents When You Specify TRU-STOP Brakes



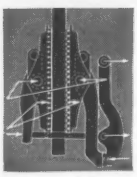
TRU-STOP brakes operate directly on the drive shaft. This means that they are not only excellent parking brakes, but dependable emergency service brakes as well. There's no dangerous self-energizing. TRU-STOP brakes have the surplus capacity for repeated use as an auxiliary to service brakes.

100% Ventilation Minimizes Fading



Brake efficiency depends on ability to dissipate heat rapidly and so prevent fading. TRU-STOP brakes are 100% ventilated. Discs are exposed to air even while braking. The TRU-STOP ventilation system circulates air *between* the disc plates.

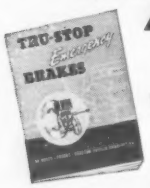
Longer Life with Uniform Brake Pressure



The discs of TRU-STOP brakes are squeezed between the flat surfaces of the shoes. The brake lever operates both the front and rear lever arms simultaneously, and pressure is exerted on the center of each shoe. This puts the entire lining surface in contact, provides for even wear. TRU-STOP brake linings are *easy* to replace.

FOR POSITIVE PROTECTION...

Specify TRU-STOP BRAKES *on* ANY *Heavy-Duty Equipment that Requires Braking*



***WRITE* for Catalogs DH-33 and DH-530**

Automotive and Aircraft Division

AMERICAN CHAIN & CABLE

601 Stephenson Bldg., Detroit 2
6800 East Acco Street, Los Angeles 22 • 929 Connecticut Ave., Bridgeport 2, Conn.

ACCO
TRADE MARK

. . . New Products

gines: maximum fuel economy at conservative ratings; maximum use of standard parts, particularly those of higher service usage; and maximum weight-saving and space-saving per horsepower.

GM realized that many customers would prefer to remain with the engine they are now using. The new engines were therefore integrated with the present ones.

The expanded line features increased speed, reduced torque and configuration necessary to meet new applications of the earthmoving industry.

• **Interchangeable parts**—One important feature of the engines is the wide interchangeability of parts. In the entire line there are only three cylinder sizes. Pistons, rings, valves, valve operating mechanisms, injectors and many other parts are interchangeable, engine for engine, within each series.

The company points out that a single power unit instead of two in a heavy hauler or scraper means the elimination of one complete power transmission. It also means reduced maintenance costs.

In the lower horsepower range, the 2-, 3-, 4- and 6-cylinder "53" engines—ranging from 20 hp to 195 hp—have many applications in the construction field; as small wheel and tract-type tractors, loaders, hoists, auxiliary engines on trucks, cement and asphalt paving equipment, ⅜-, ½-, and ¾-cu-yd shovels, core drills, air compressors and generator sets.

Production of the new engines at the Division's assembly plant at 13400 West Outer Drive, Detroit, Mich., is now under way.

. . . New Product briefs

• **Portable batcher**—Designed to incorporate cement and aggregate batching into a one-package automatic unit, the Johnson "Automaster-CA" offers high capacity paver batching. Easy transportation of the one-stop plant by truck is possible because no shipping piece is wider than 8 ft. C. S. JOHNSON CO., CHAMPAIGN, ILL.

• **Re-roofing application**—A cold process built-up roofing method "vulcanizes" a new roof right over the old roof surface, eliminating the need for old roof removal and felt delamination. Single or multiple ply "Vulca Dek" construction and the old roof surface are bonded firmly together with a liquid static asphalt sealing compound. There is no air-entrapment to eventually cause blistering. All materials are supplied ready to use and applied cold. THE MONROE CO., INC., 10703 QUEBEC AVE., CLEVELAND 6, OHIO.

NOW... from Link-Belt Speeder

three NEW ZEPHYRCRANES

plus the revolutionary "HI-LITE" boom

Priced to keep you competitive with today's marginal bidding—yet designed to pay off where most work is done—with long booms at extended radii.

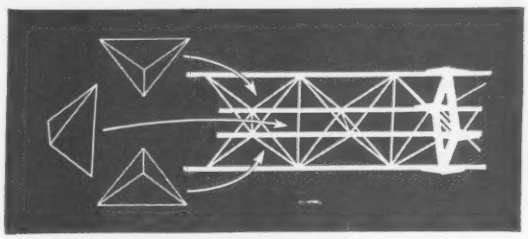
These Link-Belt Speeder heavy-duty truck-cranes offer more important features as standard equipment than any other truck-cranes, such as Speed-o-Matic power hydraulic controls, independent rapid boom-hoist with boom-lowering clutch, pin-connected booms, swing brake. Optional features include: reversing clutches for either or both main operating drums, powerful third drum, hydraulic counterweight removal jacks, hydraulic outrigger jacks and beams, four axle-carriers, plus many other features.

For details and new catalogs, see your Link-Belt Speeder distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa. 14,900

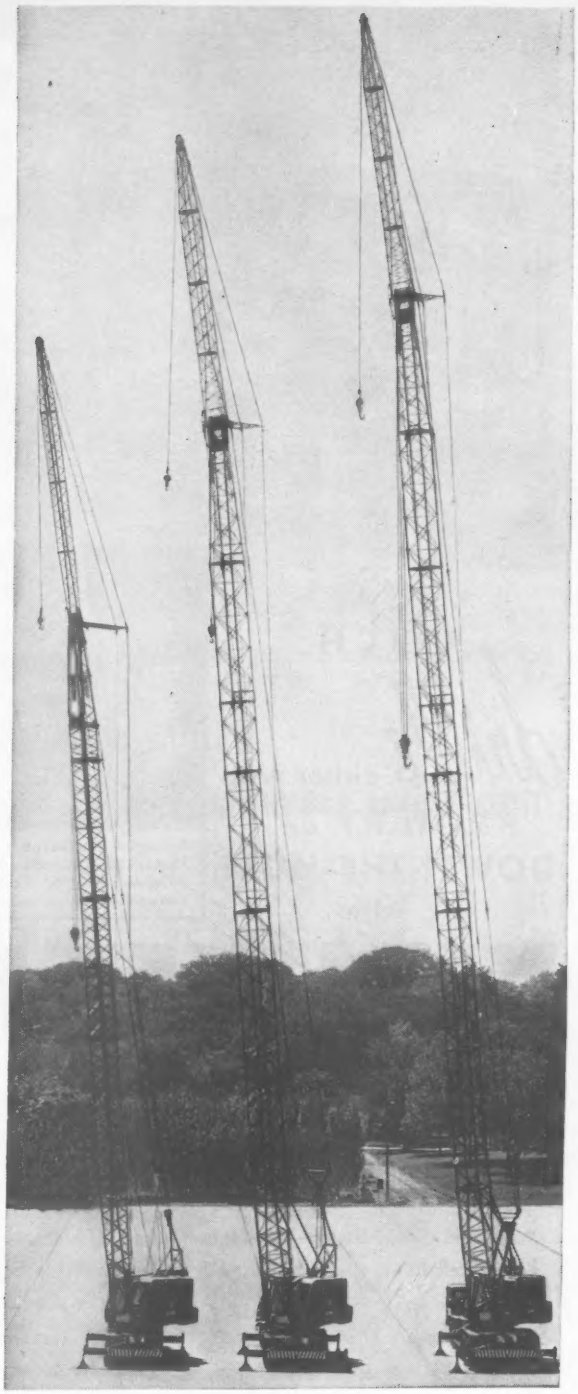
NEW 30-TON HC-88A — Unassisted, lifts and handles up to 160′ of new "HI-LITE" boom and jib. The only truck-crane in its work range 8 ft. wide.

NEW 35-TON HC-98A — Unassisted, lifts and handles up to 180′ of new "HI-LITE" boom and jib.

NEW 40-TON HC-108A — Unassisted, lifts and handles up to 200′ of new "HI-LITE" boom and jib.



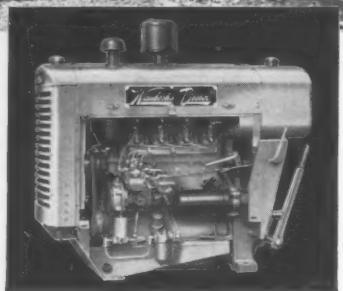
Revolutionary "HI-LITE" booms feature new tetrahedron design that virtually eliminates the whipping, twisting and deflection normally experienced with long booms. Sets of internal cross-braces meet at common points along the 44" square box section forming scores of tetrahedrons (pyramid-like structures) . . . provide maximum resistance to stress in every direction. High-strength steel tubing is lightweight . . . permits longer booms than previously possible.



LINK-BELT SPEEDER

21 crawlers | 6 truck-cranes | 4 self-propelled

It's time to compare . . . with Link-Belt Speeder



Powerful Waukesha Utility Four—Model 180-DLCU Diesel—four cylinder, 3½-in. bore x 3¾-in. stroke, 144 cu. in. displacement, counterbalanced crankshaft.

REICH *drills* either way ROTARY or DOWN-THE-HOLE with

WAUKESHA *Diesel* POWER

The *small* rig that's designed for down-the-hole tool drilling of holes up to 6½-in. diam. in hard rock—the Waukesha Diesel-powered, Model C-250 Reich Drill is said to be the only machine of its kind in the world. It does the work of small hard rock rigs that drill with drifters; and large hard rock machines that drill with down-the-hole tools. But the Reich is only half the size... and half the cost...of large machines. The makers, Reich Bros. Mfg. Co., Terre Haute, Ind., gave the drill an equally versatile power unit. The Waukesha 180-DLCU has special Diesel design characteristics including the patented spherical combustion chamber which gives lively responsive acceleration, smoothness of operation, and clean burning with high economies both of maintenance and fuel. Get the details of Waukesha dependability in Bulletin 1627.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES 399

Publications

Grouser plates—Describes in detail the features of Kensington's complete line of grouser plates for all standard model crawler tractors. Bulletin No. 1061. Kensington Steel, Division of Poor & Co., 505 Kensington Ave., Chicago 28, Ill.

Aluminum fencing—Details of highway, industrial and municipal installations of aluminum chain link fence plus data on its strength, durability and corrosion resistance. 12-page booklet. Box 762, Alcoa Building, Pittsburg 19, Pa.

Backhoe—Description of a backhoe designed for rapid mounting on rubber tire or crawler tractors. 8-page folder. Badger Div., Warner & Swasey Co., Winona, Wis.

Integral-shaft sheaves—Construction and operating features of stepless speed control in large machine drives. 6-page Bulletin 20B7897B, Allis-Chalmers, Milwaukee 1, Wis.

Land forming—Suggestions for engineering a land-forming project to provide good field drainage and easier irrigation and cultivation. 8-page booklet Form D858, Caterpillar Tractor Co., Peoria, Ill.

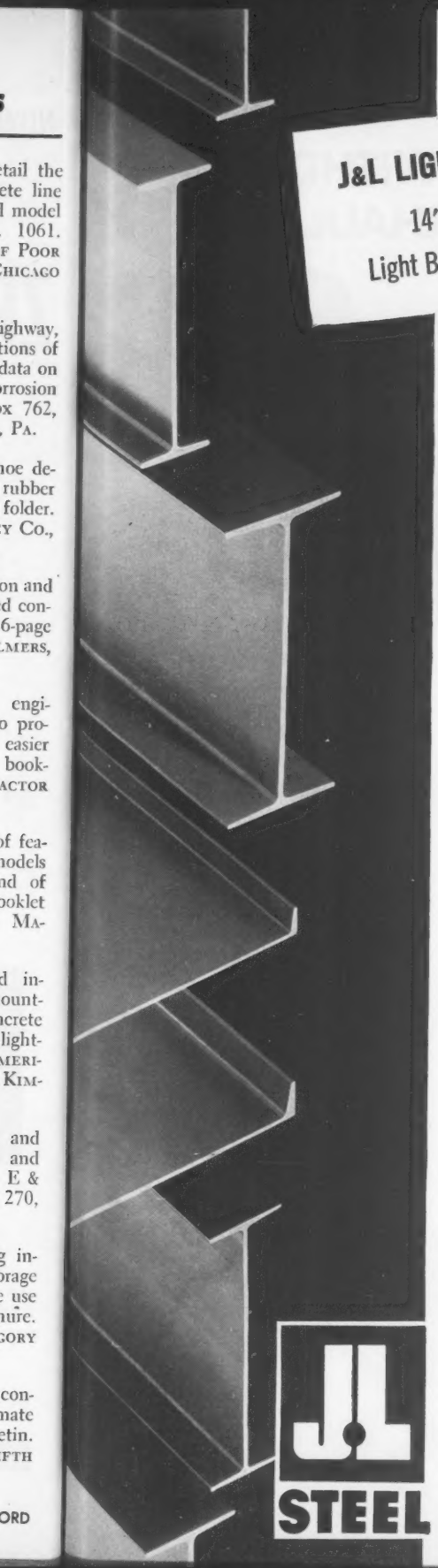
Grading equipment—An outline of features of nine motor grader models ranging from 75 to 195 hp, and of tandem and 3-wheel rollers. Booklet HWG-561, Huber-Warco Co., Marion, Ohio.

Lighting—Engineering tables and information on design features and mounting arrangements of stress-spun concrete standards for street and highway lighting. 28-page Catalog No. 400, American Concrete Corp., 5092 N. Kimberly Ave., Chicago 30, Ill.

Tools—A reference book on tools and equipment for heavy construction and industrial use. Catalogue Dept., E & B Mill Supply Co., P. O. Box 270, Perth Amboy, N. J.

Insulation—A method of installing insulation and jacketing on large storage tanks for hot materials through the use of end-welded studs. 4-page brochure. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, Ohio.

Belt conveyors—Description of conveyors and data on how to estimate conveyor requirements. 4-page bulletin. Western Machinery Co., 650 Fifth St., San Francisco, Calif.



J&L Light Beams are used in this suspended beam construction for The Standard Structural Steel Company's modern office building. Results: interior columns are eliminated; use of floor space is more efficient.

14" J&L Light Beams are twice right— right depth for rigidity, right design for appearance

...reports The Standard Structural Steel Co.

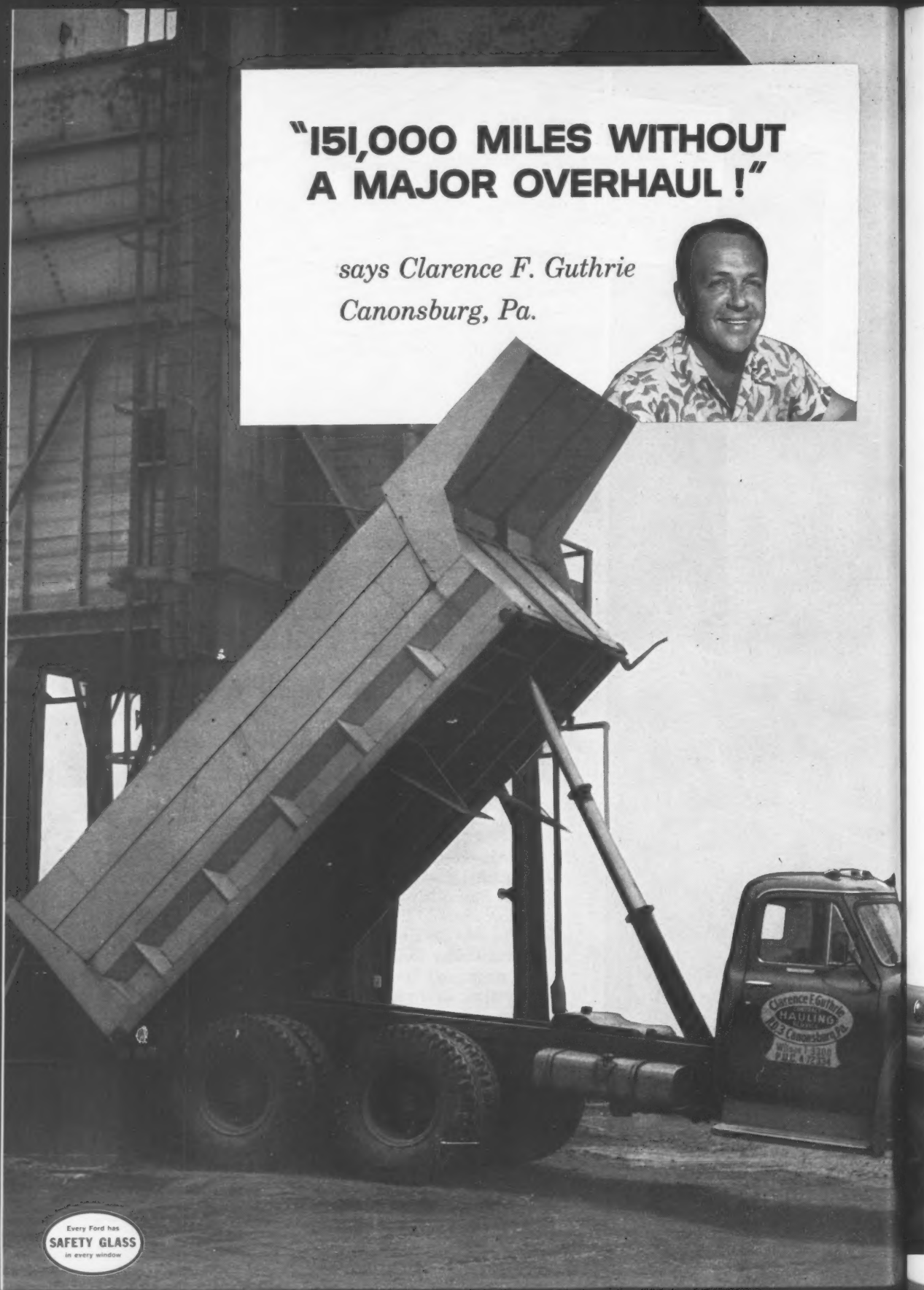
In an interesting departure from conventional design, The Standard Structural Steel Company, Newington, Conn., utilized J&L 14-inch Light Beams in roof construction to help achieve more efficient use of floor space in their new office building.

The new design provides a full-supported ceiling without interior columns. The J&L Light Beams, weighing 17.2 pounds per foot, are suspended from main bents by pipe hangers and bolts. An acoustical steel roof deck is welded to top flanges of the Light Beams between bents. The construction exposes the bents on the outside of the building and the Light Beams on the inside.

Take full advantage of these economical Light Beams in your next project design. They are available in regular carbon and high tensile grades. Other readily available lightweight J&L structurals are hot rolled Junior Beams and Junior Channels; for information, write to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA


"151,000 MILES WITHOUT A MAJOR OVERHAUL!"
says Clarence F. Guthrie
Canonsburg, Pa.
Clarence E. Guthrie
HAULING
R.D. 3 Canonsburg, Pa.
Every Ford has
SAFETY GLASS
in every window

"Ford's 332-cu. in. V-8 is the hottest thing on the road for its size!

"Our fourteen Ford trucks all have exceptional durability records. Several '55 T-800 dumps, grossing 48,000 lb., have over 200,000 miles on 'em. They went an average of 150,000 miles before we touched the engine. And for power and performance, too, the Ford 332 engine is the hottest thing on the road for its size.

"Ford's better visibility, handling ease and power steering are big factors in our excellent highway safety record. We've had many million-mile accident-free years with our Ford fleet.

"In addition to our sand and gravel business, we have ten Ford F- and C-800 tractors that make long, over-the-road trips hauling limestone one way and steel on the way back.

"No matter where our trucks go, if we need parts we can get them fast because Ford Dealers are about everywhere. To us, Ford spells dependability in every way."

GO FORD-WARD for savings with '59 Ford Trucks!

Whatever your job . . . wherever you do it—you'll find Ford Heavies and Extra Heavies are engineered and built to do it better! And the '59 improvements in these models will bring still more benefits to your operation.

Greater operating economy with new, faster rear axle ratios and wider choice of transmissions.

Higher payloads and longer axle life with new, higher-capacity front and rear axle options for most models.

Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

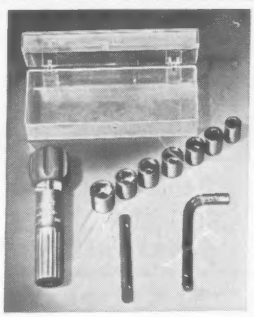
Yes, the new '59 Ford trucks are here to take you *Ford*-ward for savings, *Ford*-ward for modern style and stamina.

See your Ford Dealer today!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

YOURS FREE! VERSATOOL SOCKET WRENCH KIT



It's our get-acquainted gift for those who plan to buy a truck during 1959.

Compact, "pocket-size" kit contains *seven* different size sockets with straight shank for normal use—"elbow" shank for offset work in hard-to-reach areas. Transparent plastic case provides handy storage at home, in the truck, etc.

Just take this coupon to your local Ford Dealer before February 22, 1959. He will fill it out for you without obligation.

FORD MOTOR COMPANY, BOX 1657, DETROIT 31, MICHIGAN

I have given the facts on the new 1959 Ford Trucks to:

NAME (print)_____

FIRM_____

ADDRESS_____

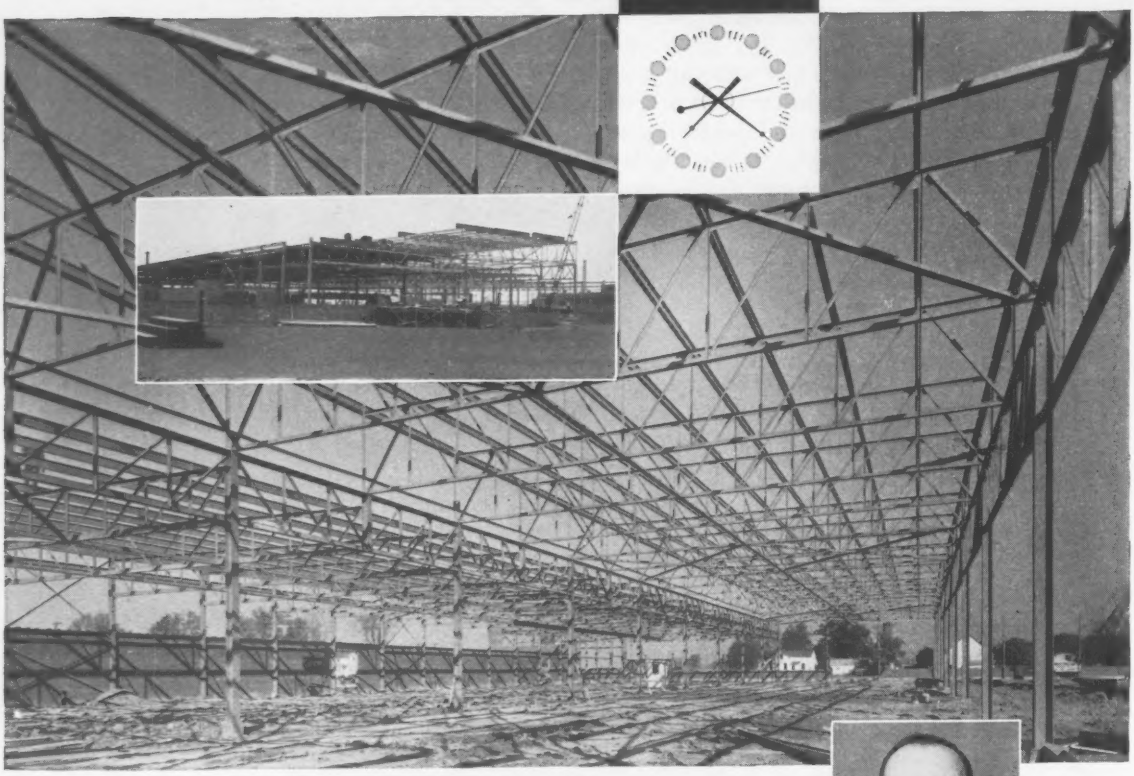
CITY_____ STATE_____

Please send him his *Free* Versatool Socket Wrench Kit

DEALER NAME_____

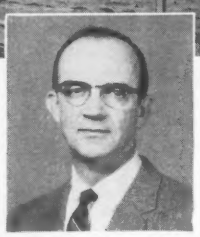
ADDRESS_____

"We just say WHERE ...and WHEN



INTERNATIONAL SERVICE

is there . . . then!"



says Mr. CLIFF C. GLOVER,
Executive Vice-President
Batson-Cook Company,
West Point, Georgia

"And this Inland Container Corporation plant at Ashtabula, Ohio, is a good case in point. It is the third Inland plant for which International Steel has served Batson-Cook as fabricator and erector of the structural steel; the others were in Indiana and Georgia. In each instance we have been able to meet construction deadlines, aided by the dependable delivery of fabricated structural shapes and on-schedule erection by International Steel. Distance is no handicap when we work with International. No wonder we are glad to work with them — *wherever* we are building."

For structural steel fabricated and supplied to match exact specifications . . . for capable planning help on any project at any stage from start to finish . . . investigate the advantages to you of International Service.

BATSON-COOK construction projects on which International Steel has participated are:

- Inland Container Corporation Plant Ashtabula, Ohio
- Inland Container Corporation Plant Evansville, Indiana
- Inland Container Corporation Plant Rome, Georgia
- Naval Air Station — Dobbins Air Force Base Atlanta, Georgia

INTERNATIONAL SERVICE

INTERNATIONAL STEEL COMPANY

1455 Edgar Street · Evansville 7, Indiana

Men and Jobs

'Not Enough to Do,' Says 100-Year-Old Employee

John T. Croswell, an estimator for Baltimore Contractors, Inc., went into a Baltimore hospital last month for a checkup and thereby missed work for more than a week.

For most people that would not be unusual. But then, most people aren't 100 years old.

At 100, Mr. Croswell is easily the oldest man actively engaged in construction in Maryland—probably in the U. S.

Mr. Croswell was born Nov. 23, 1858, on Maryland's eastern shore and began by working in the building trades.

He came to Baltimore almost three-quarters of a century ago and became a construction foreman.

Mr. Croswell has been with his present employers for the past 24 years. The venerable gentleman usually does not go to the office more than two or three days a week.

His one complaint: "I don't get enough work to do."

Public Health Veteran Heads New Water Agency

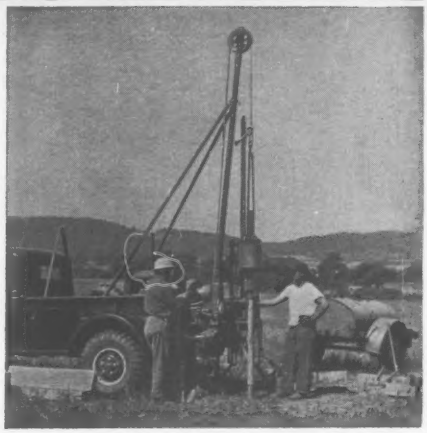
Clarence I. Sterling, Jr., has been appointed director and chief engineer of Massachusetts' new division of water resources.

He has been a staff member of the state department of public health for 30 years. Between 1942 and 1951 he served as chief engineer of the Institute of Inter-American Affairs, supervising over 600 projects in sanitary engineering relating to Latin America.

Succeeding Mr. Sterling in the department of public health is Ralph M. Soule, formerly associate sanitary engineer in charge of water supply section of sanitary engineering division.

(*Men & Jobs continued on page 76*)

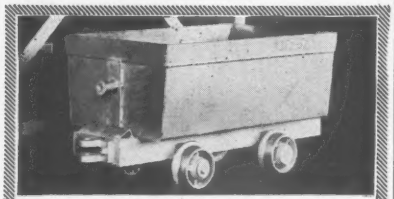
DEPENDABLE SOIL SAMPLING EQUIPMENT IS NO PROBLEM FOR THIS DRILL CREW



With a contract to obtain representative samples of the soil strata along the center line of an important link on the new Interstate Highway System, this contractor is using the S&H Split Barrel Sampler for recovering samples in this immediate area. At the next location, sampling for a bridge foundation, the S&H Shelby Tube Sampler will be utilized to recover the undisturbed samples that are necessary.

Sprague & Henwood's sampling equipment is designed for long, dependable service with a resulting minimum cost. The complete line of sampling devices and equipment is described in the new Bulletin 300.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.
MEMBER OF: DIAMOND CORE DRILL MANUFACTURERS ASSOC.
New York — Philadelphia — Atlanta — Pittsburgh — Grand Junction, Colo. — Buchans, N.F.



PRACTICAL, RUGGED MINE CARS
Side Dump and Rocker Dump cars, 24" gage. Tunnel cars, 18" and 24" gage. Various capacities. Ask for Bulletin No. 18.

MAYO
TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

PERMACRETE Precast Concrete
CROSSING SLABS

- Steel edge armored, steel reinforced slabs.
- Creosoted oak fillers and flangeways.
- Durable, smooth riding, low maintenance.

PERMACRETE PRODUCTS CORPORATION
1839 South Wall Street, Columbus 7, Ohio
Columbus, Ohio Greenville, Ohio Chicago, Illinois
Write for Bulletin X-541

For **CIVIL ENGINEERS**

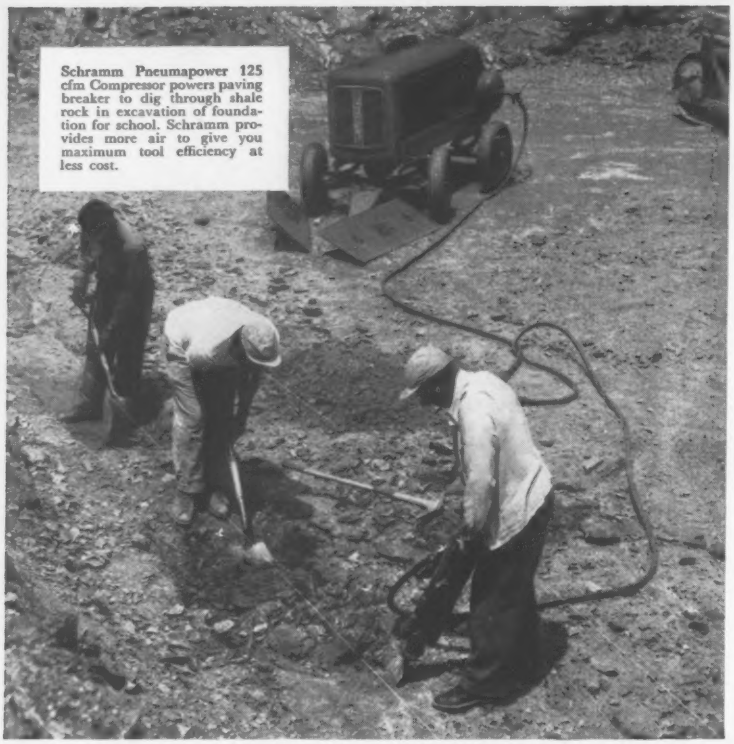
THE **BRUNTON*** POCKET TRANSIT

IT'S HANDY...
weighs only 9 oz.; 2¾" x 3" x 1⅛"; easy to carry in pocket, on belt, in car.

IT'S VERSATILE...
ideal for preliminary and supplementary surveying; used as a compass, transit, level, plumb, alidade, clinometer. Shows direction to 1°; level, slope or grade within 1°.

IT'S MADE TO LAST A LIFETIME
"Over 60,000 Brunton Transits since 1896"
See your local engineering supply house or WRITE FOR CATALOG
*Brunton is a registered trademark of

WM. AINSWORTH & SONS, INC.
2151 LAWRENCE ST. • DENVER 5, COLORADO



Schramm Pneumapower 125 cfm Compressor powers paving breaker to dig through shale rock in excavation of foundation for school. Schramm provides more air to give you maximum tool efficiency at less cost.

CONTRACTORS WITH COMPETITIVE COMPRESSORS REPORT:

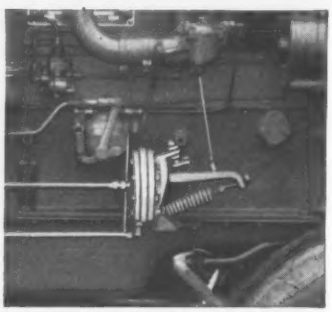
The man with the Schramm does 15% more work

Take a close look at your present compressors. Compare them with this Schramm 125 Portable. Chances are you're not getting your money's worth. Time after time, contractors report that *competitive* 125 cfm compressors take from 10 to 15% more horsepower to provide 125 cfm of air at 100 psi. *They also take 15% more fuel* . . . and cost more to buy!

Here's the smallest, most compact compressor in its rating. It's light weight, easy to move. Twelve-volt electric battery makes it easy to start, even in cold weather. Any engine mechanic can easily service . . . parts are 90% interchangeable between engine and compressor.

The statements above are *FACTS*. Let us tell you about them in more detail and show you our complete line of Portable Compressors—one or more of which will suit your needs exactly. Send today for your free copy of SPB-58.

Schramm 75 cfm Compressor is ideal for air tools used by contractors. Use it to power backfill tampers, chain saws, paving breakers, riveting guns, rock drills, trench and clay diggers, sheeting drivers.



Automatic control is a feature of Schramm Portable Compressors. The patented Schramm Pneumastat controls speed of each unit without operator's manipulation. Engine operates from idle to rated speed according to air demands.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. • West Chester, Pa.

Please send me a free copy of Schramm Portable Air Compressors, SPB-58.

Name_____

Title_____

Address_____

City_____ Zone_____

State_____

SCHRAMM, INC.
610 North Garfield Ave., West Chester, Pa.

. . . Men and Jobs

Providence Consultants Name New Associates

Charles A. Maguire & Associates, consulting firm of Providence, R. I., has admitted the following associates: Harold Bateson, Peter V. Cipolla, Robert L. Pare, Gordon Bronson, Thomas C. Murphy, Francis C. Pierce and Eric Reeves.

Wendell S. Brown and Edward O. Greene will act as special consultants to the firm. Partners are Grant H. Potter, Milton E. Nelson, Frederick H. Paulson and Howard W. Holmes.

Careers

Business

Vernon T. Stack, Jr., has been appointed director of the new consulting division of Roy F. Weston, Inc., Newtown Square, Pa., engineers in industrial water pollution control, sewage treatment, water supply and air pollution control.

Charles T. Wanzer, vice president and manager of construction of the Duke Power Co., Charlotte, North Carolina, has been named chief engineer of the company. C. E. Watkins has been made manager of construction for the utility.

Education

Prof. Stephen Knight of the University of Vermont has been elected president of the Vermont Branch of the American Society of Civil Engineers for 1959.

Associations

Julien R. Steelman, president of The Koehring Company of Milwaukee, Wisconsin, has been elected chairman of the Board of Directors of International Road Federation.

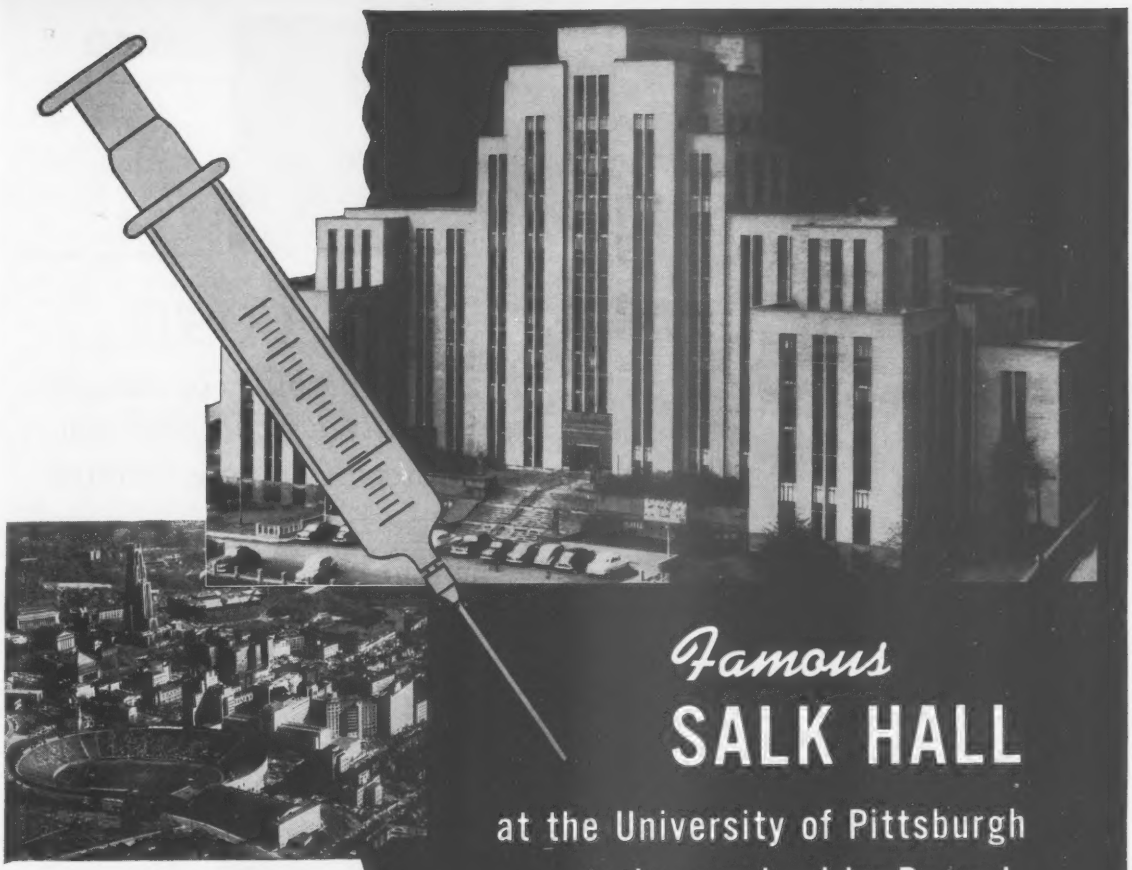
Public Works

Maurice K. Goddard, Pennsylvania's secretary of forests and waters, has been renamed to the post by incoming Governor David L. Lawrence.

Ray E. Anderson has been named resident engineer at the Jackson Lock and Dam, Jackson, Ala., to succeed Otto W. Tidwell, who is retiring.

R. J. Burnside has been appointed director of operation and maintenance for Canada's St. Lawrence Seaway Authority. He had been director of canal services for the Department of Transport since 1955.

A. M. Rawn, chief engineer and general manager of the Los Angeles County Sanitation District has retired. C. R. Compton, former assistant chief engineer has been named to the post Mr. Rawn vacated.



Salk Hall and campus photo courtesy of University of Pittsburgh.

Famous SALK HALL

at the University of Pittsburgh to be serviced by Ric-wiL underground piping . . .

Salk Hall is where Dr. Jonas E. Salk and his staff are conducting their continuous virus studies. This ten-story building will eventually become a center for experimental medicine with additional space for research conducted by many faculty members.

Ric-wiL is proud to be a part of this great institution and has, since 1932, supplied the underground steam distribution lines. Over 10,000 feet of Ric-wiL serves an area more than a half-mile long and a half-mile wide.

Over 500 universities, colleges and schools are presently using Ric-wiL Piping Systems.

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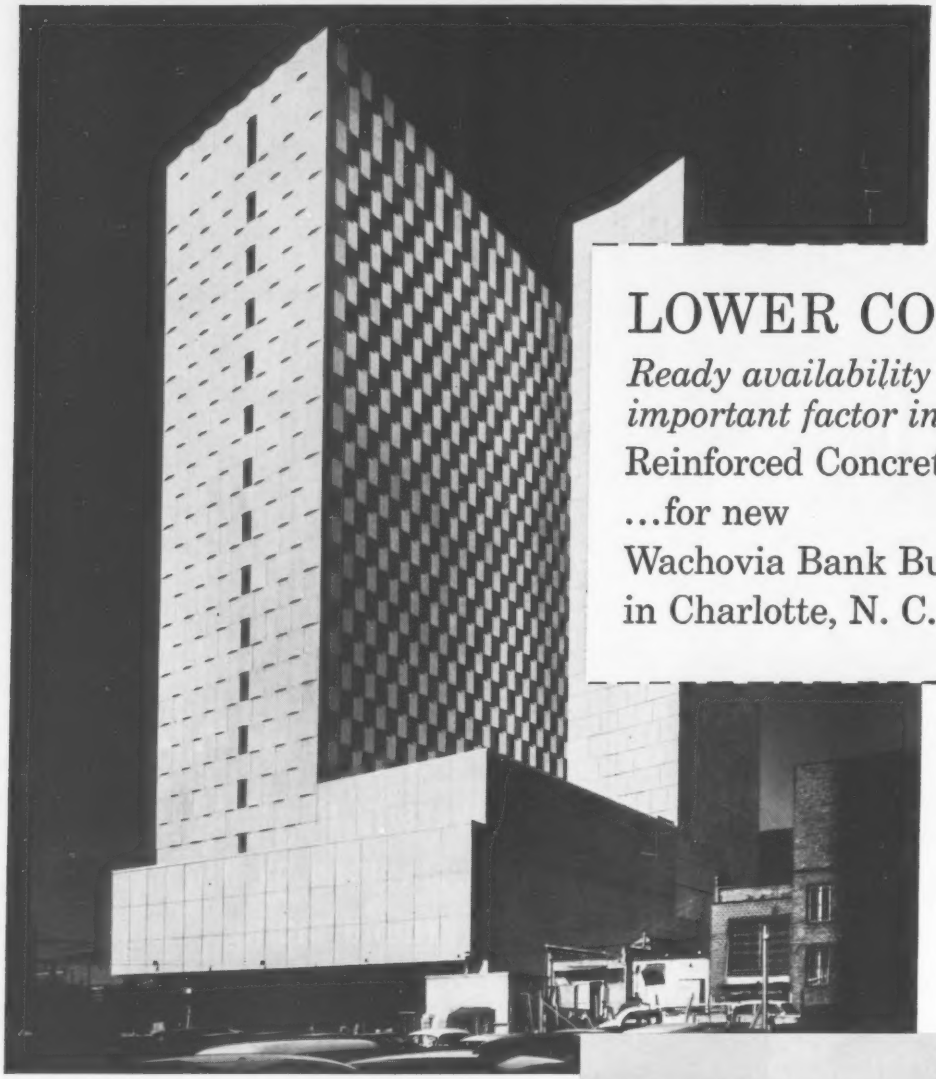

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Wachovia Bank and Trust Company Building, Charlotte, N. C.
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Contractor: J. A. Jones Construction Co., Charlotte
Structural Engineering: Severud-Elstad-Krueger, New York City

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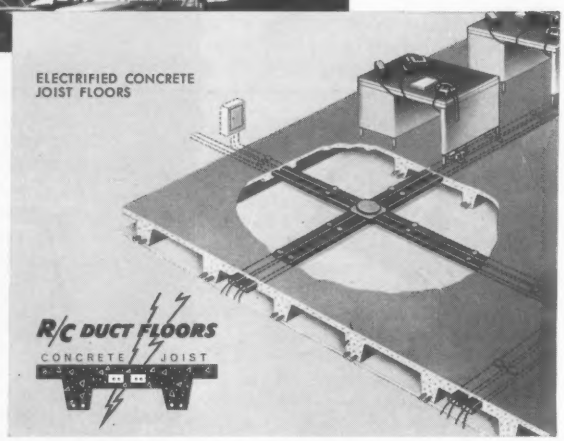

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Obituaries

G. Gale Dixon, 73, an associate of Parsons, Brinckerhoff, Hall and Macdonald, New York City consulting firm. From 1912 to 1916 he was chief engineer of the bureau of water works improvement at Akron, Ohio. For the next 10 years he was connected with waterworks developments in Boston and other eastern cities. He went to Youngstown, Ohio, in 1926 as deputy chief engineer of the Mahoning Valley Sanitary District. As an associate of the New York firm, he was active in planning the improvements to the Meander, Ohio, water supply system in the last few years.

Frank W. Hubbard, a former assistant chief engineer with the Toronto, Hamilton and Buffalo Railroad. He worked on Canadian highway projects and on the construction of two subways in Hamilton, Ontario, as a member of Dominion Construction Co.

Jackson H. Wilkinson, 66, retired river forecaster for the Tennessee Valley Authority. Except for a few years of bridge design and construction, his professional life was dedicated to the fields of hydraulics and hydrology. He developed the procedures for forecasting flows for the operation of the TVA system of multipurpose reservoirs and was in charge of that work for 20 years before his retirement in 1957.

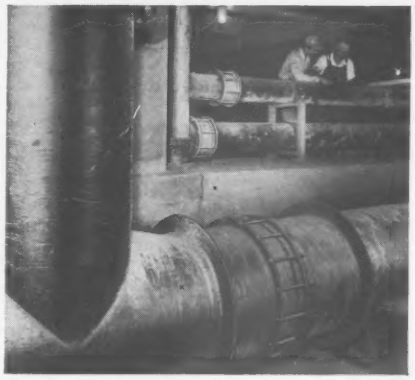
Erwin D. Blakney, 60, comptroller and executive assistant to the district engineer of the Army Engineers Little Rock District. He had been with the Corps of Engineers 40 years, serving at Nashville, Memphis, Louisville, New Orleans and Florence, Ala.

Benjamin W. James, 83, retired West Coast construction engineer. Mr. James graduated from the University of Wisconsin in 1897. He followed his engineering career in Washington State, Arizona and Southern California.

Thomas R. Remsen, 79, retired civil engineer and paper mill superintendent. He was a Dartmouth College graduate of 1901. He was connected at one time with the New York engineering firm of George F. Hardy & Co., which specialized in power and paper-mill jobs.

Asa G. Proctor, 73, city engineer of Woodland, Calif., from 1912 until 1956. He had resigned recently as president of the California State Board of Registration for Civil and Professional Engineers. He had served on the board under appointments by six governors.

Joining pipe the Dresser way...



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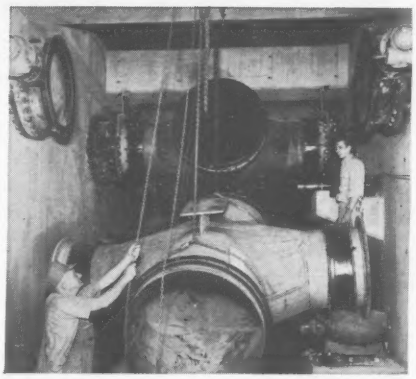
The 8-inch, 10-inch and 30-inch Dresser-Coupled lines illustrated here are part of the system used in servicing the Clague Road's advanced rapid-sand type filters.

***often* the *only* way!**

This battery of steel crosses is in the new Clague Road Filtration Plant, designed by Havens and Emerson, Cleveland, Ohio. The Plant will carry a normal flow of 50-million gpd. Contractor: Hunkin-Conkey Construction Company.



Dresser® Couplings provide the essential leeway for bolting up cross flanges to valves in tight spots. They'll take deviation caused by settling concrete and remain bottle-tight . . . permanently! Dresser's vibration-proof properties protect valves and other expensive equipment, and protect the pipelines, too. With a Dresser Coupling, two man-minutes per bolt gives you a permanent, leak-proof joint that absorbs expansion-contraction movement, keeps maintenance problems to a minimum, and makes repairs easier if and when they do become necessary.

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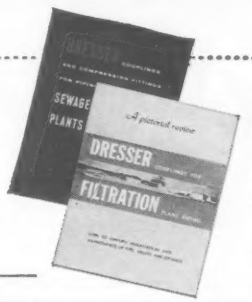

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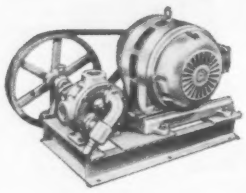

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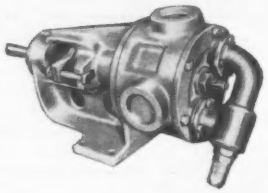

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Legal

Delays in Work

Acts of owner may excuse defaults by contractor

A contractor is not liable in damages for delayed performance when the delay results from acts of the owner or his agents.

The problem is one contractors frequently encounter. It is discussed at length in an Illinois decision[1] involving a homebuilder who fell behind schedule because of actions of the owner.

On several occasions, the homebuilder had to suspend work at the owner's request. At other times, he had to depart from the plans and specifications at the owner's direction.

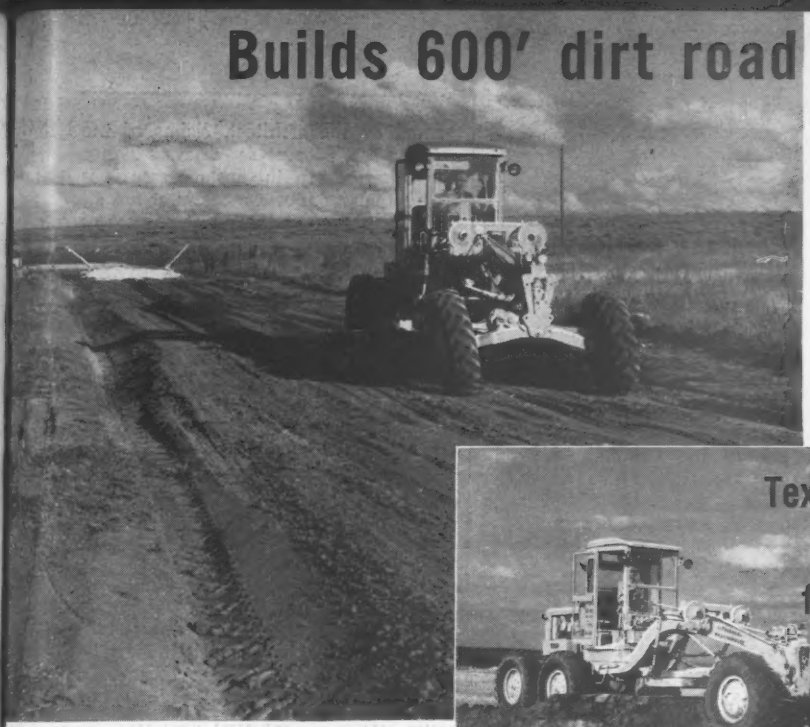
A quarrel developed and the homebuilder sued the owner to collect for the work he had done. The court dismissed the owner's counterclaim for damages for delayed performance and found in favor of the builder.

The appellate court, quoting from another case,[2] stated: "Mere delay in the performance of a building contract will not defeat the right of a contractor to collect the contract price, and delay caused by the owner excuses the contractor so far as the time of performance is concerned."

Relying on another case[3], the court continued: "Where the delay is caused by extra work directed by the owner and the architect, the contractor cannot be held liable therefore. Neither can he be held liable when he is allowed to proceed with the work after the time fixed for its completion, where the owner accepts the work after it is completed and makes payment without raising any question as to the delay. Literal compliance with the provisions of a contract is not essential to a recovery. It will be sufficient if there has been an honest and faithful performance of the contract in its material and substantial parts, and no willful departure from or omission of the essential points of the contract.

"The instant case differs somewhat from the case last cited, in that the defendants (owners) here did not make payment without raising any question. It is true, however, that they accepted the work in so far as it was completed, and locked the plaintiff (contractor) out of the house where his work had been done and his material furnished. This question of delay is fully discussed in the case of Edward Edinger Company v. Willis, 260 Ill. App. 106, 126, where the court said: 'Where the delay is caused by extra work or changes or-

Builds 600′ dirt road in 40 minutes



▼ Claude Robinson's 123-hp Adams grader smooths and levels location for drilling of a new gas well, near Lipscomb — 75 miles NE of Robinson's base of operation at Borger, Texas. Grader prepared site and also built a 600′ dirt road, all in less than half a day.

Texas contractor prepares Panhandle drill-site for Humble Oil Company

Contractor Claude Robinson, Borger, Texas, handles oil-field grading and roadwork, for major oil companies in the Texas Panhandle area. His 123-hp Adams† 550 grader has proved a valuable and profitable tool for the varied types of dirtmoving encountered.

Photos show the Adams on a job for the Humble Oil Company, in a comparatively new oil field near Lipscomb, Texas. Here the machine leveled and graded a 240′ x 240′ drilling area for a new gas well. Grader also built a 600′ access road, to carry heavy trucks to the drill-site from the existing county road.

Complete road, drill-site, in less than half a day!

"550" prepared the location for the drilling rig first. Grader cut-down high spots, filled the low ones... spread dirt that previously had been dozed into low-lying areas. The 123-hp "blade" then fine-graded the entire site... completed the job in just short of 3 hours.

Next, the Adams cut a smooth, well-drained, dirt access road to this drilling area... through fairly flat, heavy grassland. Grader dug the ditches, raised the roadway, bladed banks and back slopes... built the wide, ready-for-work, 600′ road in exactly 40 minutes.

"Best ever," says experienced operator

Steady, high-output performance of the Adams has made operator, Donald Crow, an enthusiastic Adams booster. Says Don, "I can cut, grade, and ditch a mile of new road, complete, in 8 hours. And I can smooth-out a total of about 18 miles of various access roads in 9 hours, including travel. This '550' is fast, accurate, and very powerful... the power-steer makes my job easy.

"Adams really has a fine set of gears," Mr. Crow adds. "I like to back-up at the full 13 mph, and travel on the highway at up to 25 mph. During the past 9 years, I have operated just about every motor grader made. But this Adams 550 will move more dirt... it's the best I've ever run."

More value for your grader dollar

Adams owners enjoy several operating advantages that give them extra work output... features that boost profit, yet cost not one penny extra. For instance, all heavy-duty Adams graders with standard transmission, give you 8 forward speeds, 4 reverse ... plus 3 optional creeper speeds. Result — you have more gear ratios in the normal work-speed range. So you can always work the machine at, or near, full horsepower... push a maximum load at fast productive speed. And 100% anti-friction bearings in Adams' engine-to-wheel drive reduce friction... deliver a maximum of developed horsepower to wheels, as heavy-duty work-power.

You'll want to see how these and other exclusive Adams features boost production... why Adams is today's best dollar-for-dollar value in graders. Call or write us for a demonstration. †Trademark G-1827-DCJ-J

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110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

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dered by the architect, claims of the owner for damages for delays will not be allowed.' In the instant case it is clear that some of the delays, if not all of them, were at the direct request of the defendants (owners), and other delays were necessarily caused by the changes in plans requested by the defendants. It would therefore follow that the delay in the completion beyond the six month period after the excavation, was not a breach of the contract on the part of the plaintiff, and that the contract was substantially performed in so far as it was possible to do so until the time the defendants failed to make the payments in accordance with the provisions thereof. It might be noted that the delay from May to October, directly at the request of the defendants, put the construction of the house in the least advantageous part of the working year and one where there would of necessity be more delay in carrying forward the work expeditiously. The decision of the court, holding that the defendants (owners) were responsible for the delay and that they first breached the contract, was in accordance with the law."

(1) Ahmer v. Peters, 149 N.E. 2d 503, Appellate Court of Illinois, March 10, 1958.

(2) Walsh v. North American Cold Storage Co., 260 Ill. 322, at page 329, 103 N.E. 185, at page 188.

(3) Bloomington Hotel Co. v. Garthwait, 227 Ill. 613, at page 630, 81 N.E. 714 at page 179.

Courts Will Not Rewrite Construction Contracts

Construction contracts should be drawn with care. Once they are signed, they cannot be changed unilaterally even by a court.

This sanctity of the written contract is due, in part, to the body of contract law developed by the courts. Much of the law relates to the interpretation of contracts. Some of the basic rules are these:

"The courts have always held that it was not within their province to write or rewrite the provisions of a contract and that parties are free to make their own contractual arrangements. They have also always held that the provisions of a validly consummated contract will be enforced according to their terms, save such provisions as are invalidated by statute or by well recognized rules of law."[1]

"The mere fact that the parties have made an improvident bargain will not lead a court to make unnatural implications or artificial interpretations. The

Does your pusher have enough speed plus power to load your big scrapers fast?

If you are using big scrapers, you need a big pusher — one with the speed and power to minimize loading delays. You need a pusher that can position quickly, and push fast — with plenty of power at speeds that closely match the high forward speeds of your rubber-tired scrapers. You also need a pusher with the acceleration and power to boost your loaded scrapers out of the cut at high speed, to get them right into hauling gear for faster cycles.

To meet these requirements, LeTourneau-Westinghouse offers the giant, 420 hp "Twin-C*" — the world's largest rubber-tired pusher. Here are some of its advantages:

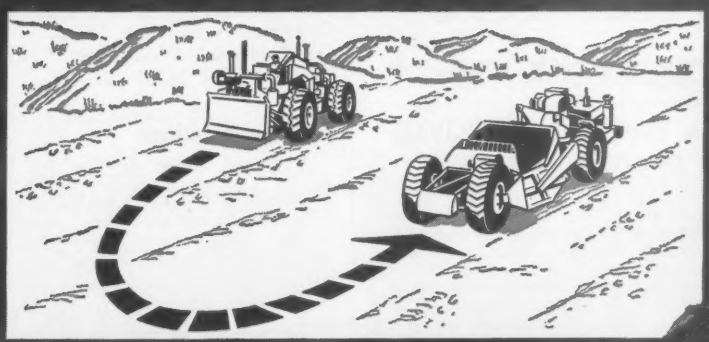
Extra power: tandem engines are synchronized thru twin transmissions and torque converters, to give pusher 420 hp, and 64,500 lb drawbar pull.

Speed: the Twin-C travels up to 20 mph forward, 5.8 in reverse.

Single unit pushing: there is no need to double-head tandem pushers when loading largest scrapers. "Twin-C" heaps 'em all, fast. You save time positioning and pushing, too... save the added cost of operating an extra machine with its extra operator.

For faster, more economical push-loading, investigate this powerful 420 hp Twin-C pusher. Phone or write for literature, facts and figures.

*Trademark TW-1747-DC-1

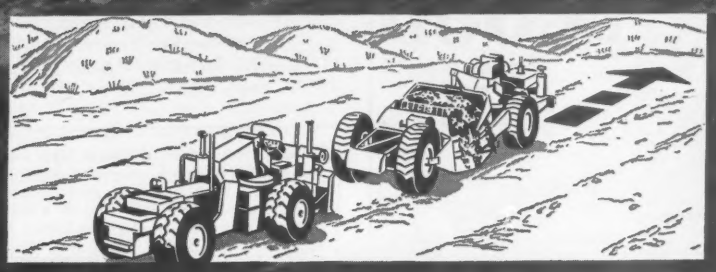


1 Positions quickly

With speeds to 20 mph and wagon-type electric power-steer, operator can quickly maneuver Twin-C into position for on-the-run pushing.

2 Pushes fast

With 420 hp, twin-engine power driving 4 big, wide-base tires, speedy twin-torque pusher tops out heaped loads fast.



3 Boosts scrapers out of cut

Twin-C's quick acceleration and power boosts scraper out of cut at high speed, lets scraper operator shift directly into higher haul gear.

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court will not under the guise of interpretation write a new contract for the parties. Williston on Contracts, Revised Edition, 1936, Vol. 3, Sec. 620, Page 1788. See also, McRoberts v. Burns, 371 Pa. 129, 88 A. 2d 741; Moore v. Stevens Coal Co., 315 Pa. 564, 173 A. 661."[3]

"The court may not write into the contract other and different conditions which the parties do not choose to insert (Raner v. Goldberg, 244 N. Y. 438, 442, 155 N.E. 733, 734), for the intent of the parties where the documents are clear and unambiguous can be distilled only from the terms of the written instrument (Nichols v. Nichols, 306 N.Y. 490, 119 N.E. 2d 351)."[3]

(1) Rasmus v. A. O. Smith Corp., 158 F. Supp. 70.
(2) Harnish v. Shannon, 141 A. 2d 347.
(3) Prudential Westchester Corp. v. Tomasino, 172 N.Y.S. 2d 652.

A Clarification

A federal court decision involving Armco Drainage & Metal Products, Inc. was reported in ENR Oct. 2, 1958, p. 63.

The report, which concerned the right to limit liability by contract, may have misled some readers into believing that Armco delivered defective pipe or performed defective work. There was no evidence that either occurred.

The decision stemmed from a suit filed on behalf of Armco, a subcontractor, to recover a balance due on a subcontract for furnishing and laying multiplate pipe. The general contractor counterclaimed for damages, representing the cost of replacing part of the work alleged to have been defectively performed.

The counterclaim was dismissed for two reasons: There was no proof that the work had been defectively performed, and the contract provided that Armco would not be liable for consequential damages.

The damages in question were "consequential" because they resulted, not from negligence, but from excessive rainfall after the work was completed and accepted by the prime contractor.

(1) United States v. Vander Heyden, 158 F. Supp. 920.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

"D's" do "class A" job

working tight schedule for busy Virginia contractor

Operator merely moves switches to activate electric motors when he wants to load or spread. Motors control bowl, apron, tailgate, and steer movements. Action is simple — cable connections are short — costs are reduced.

One of 3 D 'Pulls at work for Martin & Gass on the site of new Gunston Junior High School in Arlington, Va., boils in a full load. A second "D" starts to self-load, while waiting for pusher.

"Good production — little down-time."

That's how John M. Gass, Jr. — co-owner of Martin & Gass, Merrifield, Va. — sums up 4 years experience in using LeTourneau-Westinghouse D Tournapulls®. He added that the "D's" ability to do a variety of jobs makes it possible to keep them moving from one spread to another all season long.

Martin & Gass own 3 of the versatile "D's". Often the scrapers work as a production team — as they did in preparing the 6-acre site for the new Gunston Junior High School in Arlington, Va. The "D's" moved 75% of the 37,188 yds. required. Two shovels, 3 crawler tractors and a towed scraper were also on the job. M&G contracted to do all earthmoving, pipe-laying and site preparation on the project.

Roads anywhere without permit

The new D Tournapull, with 9-yd. capacity, has even more profit-potential than older models. This completely mobile earthmover travels job-to-job, on highways and roads without a special permit. The "D" — only 8' wide and with less than 9 tons per axle — meets load-limit requirements everywhere. Its speed range, through 5 gears, is 3.2 to 29.5 mph, to 3.2 in reverse.

At work, D 'Pull* moves fast, maneuvers easily. It can make a 180° U-turn in less than its own length. Using positive power-steer, operator "duck-walks" the "D" out of soft ground. Power-transfer differential on drive wheels goes to work automatically when one wheel starts spinning on slippery or shifting ground. When a wheel feels a tendency to slip, drive-power transfers to the wheel still on firm footing — for effective pull where the better traction is available.

All-electric scraper control

Apron, bowl, and tailgate on the 9-yd. "D" scraper are controlled by instant-acting electric motors. Operator has split-second command of these working parts. Finger movement of switch triggers proper motor; movement is completed *fast*, and with complete precision. Steering is controlled by electric switches too.

This combination of features — obtainable only on LeTourneau-Westinghouse Tournapulls — results in better, faster earthmoving, with less effort required from operators. Ask for full details on this profitable 9-yd. machine, and for verified contractor reports on its accomplishments in all materials.

Loaded "D" hauls to fill through pipe-littered section of school building-site. Maneuverable Tournapull can speed along obstructed haul roads safely, without cutting speed. Top speed of this mobile machine is 29.5 mph.

*Trademark DP-1703-DCJ-1

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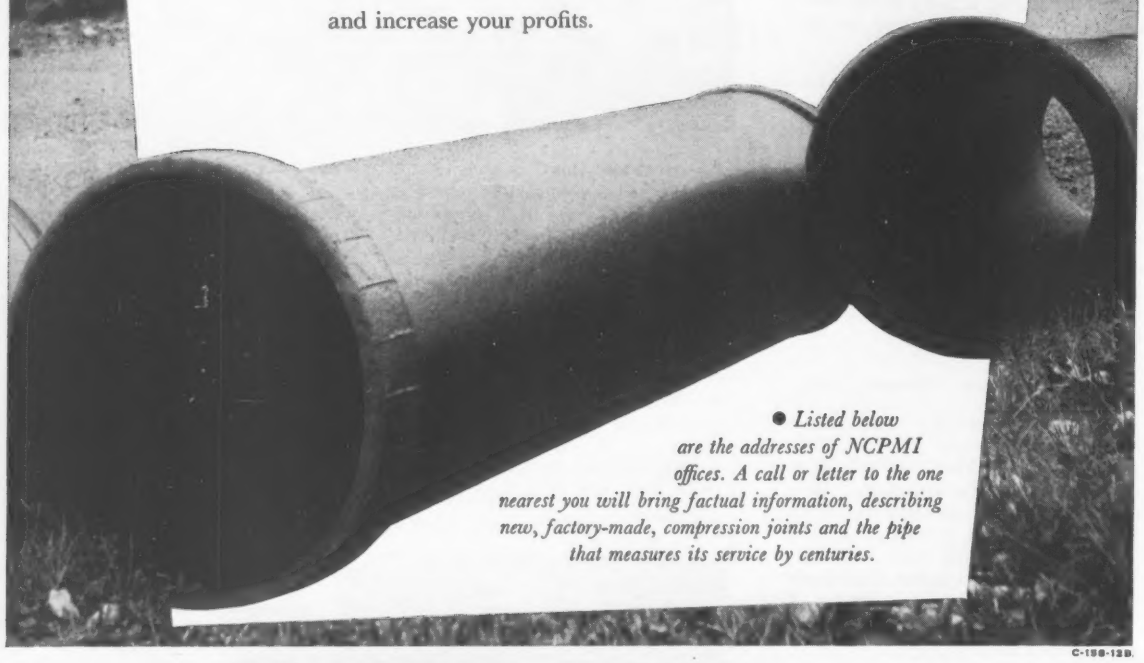

● *Listed below are the addresses of NCPMI offices. A call or letter to the one nearest you will bring factual information, describing new, factory-made, compression joints and the pipe that measures its service by centuries.*

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Better, But Cheaper Schools

SCHOOL NEEDS IN THE DECADE AHEAD—By Roger A. Freeman. 273 pp. The Institute for Social Science Research, 917 15th St., N.W., Washington 5, D.C. $5.

SCHOOLHOUSE—Edited by Walter McQuade. 271 pp. Simon and Schuster, New York, N. Y. $10.

Here are two books on schools and school construction—intended for the general public—that architects and engineers will find profitable. Both discuss educational philosophy and its effect on design of school buildings.

"School Needs" points out that since the turn of the century school enrollment has doubled and national income multiplied twenty-five fold. But during the same period school expenditures have multiplied sixty fold.

Expenditure per pupil in dollars of constant value has doubled every 20 years. But, the author claims, children learn less in American schools in 12 years than do pupils in Russia, or other countries, in 10. Quality of education does not appear to have improved commensurate with increased expenditures for schools.

Mr. Freeman traces the rise in cost to these factors:

- While productivity increased in most other fields of human endeavor, it declined in the schools.
- The proliferation of courses in a bewildering variety of subjects and the assumption of noneducational responsibilities by the schools are responsible for employment of more than 100,000 additional teachers.
- The change from the subject-centered school, which taught basic skills, to the child-centered, or activity, school required more and roomier facilities. Building space allowances per pupil have gone up between 50% and 100% over the past 20 to 30 years.

"The introduction of courses in marriage and family relationships . . . beauty care, date behaving . . . and fly casting without an increase in the number of classroom hours resulted in less time being spent on subject-matter learning," Mr. Freeman contends. "Pupils took the new courses, not in addition to the fundamental subjects, but instead of them. Mathematics became an optional subject through four years of high school in some of the country's largest school systems."

The teacher-pupil ratio has been declining consistently, the author continues. Yet several dozen research studies tried to find evidence of the advantages of smaller classes. Surprisingly, the findings more often showed academic achievements to be higher in larger classes.

Mr. Freeman concludes: "If methods are adopted for a fuller and more effective utilization of teachers and school facilities, if television, films and other technological methods of widening the range of good teachers and saving manpower are adopted, if the schools concentrate on subject-matter teaching and eliminate frills, the quality of school education will be lifted, but school funds will not need to rise much beyond the growth rate of the national income."

The second book, "Schoolhouse" is primarily a guide to "What to do when your neighborhood needs a school." But it presents other useful information. Sponsored by the Aluminum Company of America as a public service and produced under the direction of Eggers and Higgins, architects, New York City, it discusses current educational philosophy briefly, then delves right into the business of getting needed schools built.

Like the first book, "Schoolhouse" is based on a national survey of school building needs. It tells what children like about schools and reports on the construction of several schools throughout the country. It offers advice on how to choose an architect, how to convince the community to spend money for a new school and how to raise the money.

"Schoolhouse" also advises on such matters as picking a site, structure, acoustics, lighting and wiring, furniture, heating and plumbing. Charts compare costs of different designs.

The effect of educational philosophy on school design is recognized: "Until the answers to the many questions of curriculum and teaching technique . . . are clearer, there is one shrewd hedge available in school design: flexibility . . . . For instance, more individual teaching can be made possible if large spaces can be subdivided to create rooms for three, five or ten pupils in a special field. . . . If at the same time two standard rooms can be combined, it is possible to free a teacher to work with one of those small groups.

Both books provide a background of data based on surveys of our school needs; explain why schools have been built as we now see them; and offer valuable suggestions for future school design to meet our needs.

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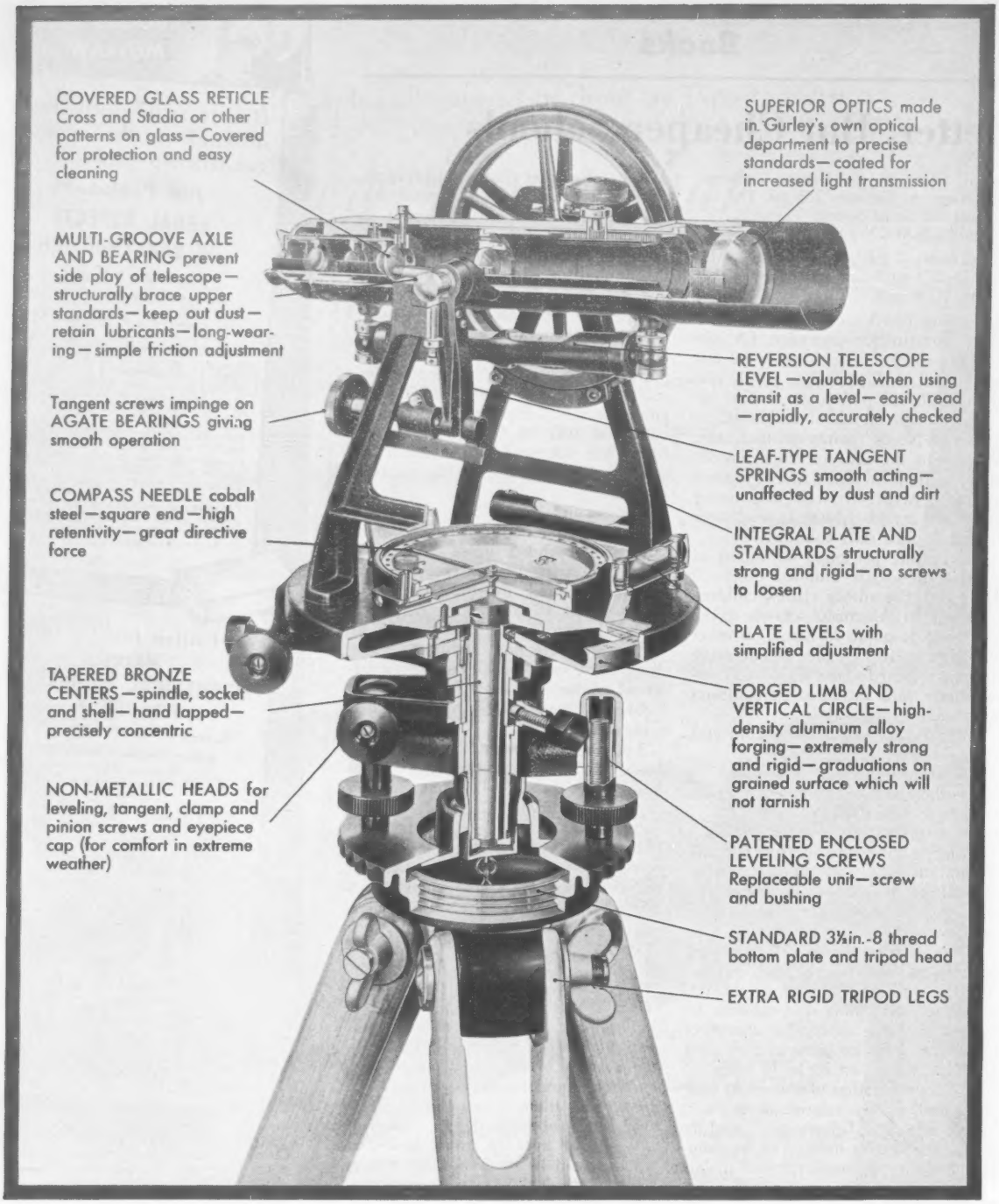
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Utah graded road to go through . . .

Lava Rock Formation

On this road and structures job in Washington County, Utah, for the State Road Commission, "unclassified" excavation includes cutting through a lava rock formation. Earl A. Johnson is district engineer for the road commission at Cedar City, and Ben Lee is resident engineer at Hurricane. The $560,877 award to W. W. Clyde Co., Springville, Utah, is 7.1% below the engineer's estimate.

The job includes construction of 3.486 miles of graded road and two concrete structures, on Interstate National Defense Highway No. 15 at Pintura-Ash Creek. The largest item in the contract (42.3%) is unclassified excavation at 91¢ a cu yd. Other prices on this item ranged from 90¢ to $1.65 a cu yd. A total of 320,772 lb of reinforcing steel will be used, contract price on which is 13.5¢ a lb, with other prices ranging from 12.5¢ to 15.5¢ a lb.

The state furnishes borrow material.

Maximum union wages paid on the job include: tractor operator $2.95; carpenter $3.075; concrete finisher $3.05; power shovel and crane operator $3.10; common laborer $2.20.

The eight bids on the job shape up like this:

1C	W. W. Clyde & Co., Springville, Utah	$560,877
2	Strong Co., Springville, Utah	597,554
11	James H. Wardle Constr. Co. & Herbert Plewe Constr. Co., Salt Lake City, Utah	809,696
EE	State Road Commission, Cedar City, Utah	603,852

Bids: 10-14-58 Items	Unit	Quantity	Unit Prices 1C	2
Road				
Excavation, uncl roadway	cy	260,625	$0.91	$0.90
Imported borrow	cy	21,600	0.28	0.30
Gravel base course	t	50,500	0.80	0.85
Overhaul, cl A	sta yd	831,000	0.015	0.015
cl B	yd mi	26,500	0.15	0.15
Watering	Mgal	7,446	0.75	1.00
Rolling, tamp roller	hr	1,210	8.00	4.00
pneu tired roller, 50 t	hr	930	5.00	9.00
self propelled or power roller	hr	930	5.00	9.00
	hr	183	8.00	9.00
CMP, 8"	lf	82	2.50	3.00
Bit CMP protection, tp B, 12"	lf	132	3.75	4.50
24"	lf	930	7.40	9.00
30"	lf	302	9.00	11.00
36"	lf	156	13.80	16.00
48"	lf	386	18.75	22.00
Cattle pass, struct plate pipe arch, 5'10" x 7'6"	lf	150	55.00	60.00
Met end sect for CMP, 24"	ea	27	58.40	60.00
30"	ea	8	89.00	100.00
36"	ea	3	138.00	150.00
48"	ea	11	244.50	300.00
Excavation, uncl structural	cy	1,626	3.00	4.00

Bids: 10-14-58 Items	Unit	Quantity	Unit Prices 1C	2
Concrete, cl A	cy	237	63.50	73.50
cl AA	cy	15	90.00	85.00
Reinforcing steel	lb	43,772	0.135	0.15
Structural steel	lb	32,080	0.16	0.20
Lumber, treated	Mfbm	0.6	500.00	500.00
Mechanical tamping	hr	219	7.00	8.00
Clear & grub	ac	50	150.00	300.00
Excavation, small ditch	cy	503	1.50	1.50
Rt of way fence, tp B, met post	lf	40,050	0.45	0.45
Gate, 10', 2-20' openings	ea	4	50.00	50.00
16'	ea	2	75.00	65.00
Markers, right of way	ea	50	9.00	10.00
FAP	ea	2	25.00	30.00
Water equipment	furn	ls	job	7,500	9,000
Construction signs	furn	ls	job	1,000	2,000
Conc Struct 257.0' to 0. Sta. 462+00				
Exc for structures, uncl	cy	400	$2.50	$4.50
Concrete, cl A	cy	561	65.50	70.00
Steel, reinforcing	lb	160,200	0.135	0.15
structural	lb	10,300	0.40	0.35
handrail	lf	532	11.00	12.00
Conc Struct 58.0' to 0. Sta 475+10				
Exc for struct, uncl	cy	1,175	4.00	4.50
Concrete, cl A	cy	862	61.00	64.00
Steel, reinforcing	lb	116,800	0.135	0.15
handrail	lf	135	11.00	12.00

Completion schedule: 250 working days

Concrete Pipe for Sanitary Interceptor

Concrete pipe took this Clear Creek sanitary interceptor sewer contract in Ames, Iowa, with no bids submitted on vitrified clay and corrugated metal sewer pipe alternates. The $219,644 award to Clark & Fitz, Bagley, Ia., is less than 1% below the second and 3.4% below the third bid. It is 13% below the city's estimate, which was priced on the corrugated metal sewer pipe.

The contract also includes construction of two syphons, structures, road crossings, and dismantling of lift stations.

The contractor furnishes all materials.

Prevailing wages include: pipelayer $2.50; tractor operator $3.15; power crane and shovel operator $3.15; common laborers $2.00.

1C	Clark & Fitz, Bagley, Ia	$219,644
2	F. L. Warren, Winterset, Iowa	221,170
5	Normoyle & Berg, Rock Island, Ill.	275,065
EE	City of Ames, Iowa	252,324

Bids: 10-21-58 Items	Unit	Quantity	Unit Prices 1C	2
Vit clay pipe, 8"	lf	647	$3.00	$6.47
Conc san sewer pipe, 18"	lf	6,423	5.25	5.50
24"	lf	995.5	7.29	7.06
27"	lf	875	8.31	8.67
30"	lf	1,655	8.80	8.81
36"	lf	6,500	12.18	11.28
Extra strength pipe, 24"	lf	233.5	20.00	21.79
36"	lf	*150	37.50	38.25
Drop manhole, 4'ϕ	ea	2	275.00	265.00
Manhole, 4'ϕ	ea	29	200.00	215.00
5'ϕ	ea	11	275.00	225.00
Syphon sta 68	ea	1	20,000	24,787
98	ea	1	20,000	20,998
Spc structure sta 22	ea	1	3,100	2,265
33	ea	1	2,800	1,679
87	ea	1	900.00	480.34
CIP, 10"	ls	job	900.00	1,119
Lift station, dismantle	ls	job	1,100	1,000
	ls	job	700.00	1,000
work at	ls	job	600.00	1,000
Clear & grub	in.	2,500	1.90	1.00
Road crossings, extra for	ls	job	1,200	2,250

* To be jacked
Commence: 11-10-58 Complete: 6-1-59

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Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Dec. 25; Next, Jan. 29.
- Wage Rates, Building Board, Lath, Insulations: Last, Dec. 25; Next, Jan. 29.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, Jan. 8; Next, Feb. 5.
- Iron & Steel Products, Pipe: Last, Jan. 15; Next, Feb. 12.

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Atlanta	$73.00	$76.00	$76.00	$79.00	$81.00	$86.00	$138.00	.....	.....	$121.00	$158.00	$22.32	$27.24
Baltimore	95.00	100.00	100.00	100.00	100.00	105.00	114.00	.....	.....	170.00	185.00	25.92	31.60
	103.00g	*108.00g*	*138.00g*	*138.00g*	*138.00g*	*138.00g*	*138.00g*	*$155.00*	*$149.00*				
Birmingham	80.00	82.00	79.00	82.00	85.00	90.00	105.00	.....	.....	115.00	160.00	21.78	26.58
	70.50	*70.50*	*70.00*	*73.00*	*73.00*	*88.00*	*73.50*	*70.50*	*70.50*	.....	.....	.....	.....
Boston	93.00f	95.00f	99.00f	99.00f	99.00f	100.00a	.....	.....	.....	.....	.....	25.92c	31.60c
	95.00	*95.00*	*109.00*	*109.00*	*109.00*	*109.00*	*129.00*	*129.00*	*152.00*				
Chicago	111.00	114.00	108.00	122.00	130.00	131.00	126.00	.....	.....	154.00	154.00	22.45	27.37
	117.00	*117.00*	*130.00*	*128.00*	*128.00*	*128.00*	*137.00*	*137.00*	*137.00*				
Cincinnati	93.00	94.25	86.50	90.50	95.00	102.75	116.00	.....	.....	129.50	127.50	25.00	30.48
	93.75	*96.00*	*96.00*	*108.50*	*88.50*	*114.50*	*127.25*	*127.25*	*127.25*	.....	.....	.....	.....
Cleveland	88.00	90.00	95.00	96.00	100.00	103.50	.....	.....	.....	.....	.....	25.37	30.93
	.....	.....	*102.00*	*102.00*	*98.00*	*101.00*	*115.00*	*115.00*	*115.00*	.....	.....	.....	.....
Dallas	74.50k	74.50k	72.00k	72.00k	74.50k	75.50k	120.00k	.....	.....	130.00	125.00	18.72	22.80
Denver	*Not in stock*		*109.00*	*110.00*	*110.00*	*112.50*	*136.00*	*148.50*	*153.50*	.....	.....	13.92	16.98
Detroit	127.50	130.00	126.75	128.00	133.00	133.00	.....	.....	.....	141.00	.....	25.00	30.48
	136.00	*136.00*	*138.75*	*143.50*	*141.00*	*146.00*	*196.00*	*206.00*	*206.00*	.....	.....	.....	.....
Kansas City	120.00	120.00	120.00	120.00	125.00	135.00	.....	.....	.....	.....	.....	16.56	20.16
	120.00	*120.00*	*120.00*	*120.00*	*125.00*	*125.00*	*160.00*	*225.00*	*225.00*	.....	.....	.....	.....
Los Angeles	*94.00*	*94.00*	*94.00*	*94.00*	*94.00*	*94.00*	*126.00*	*131.00*	*131.00*	.....	.....	16.61ab	$0.25ab
Minneapolis	*135.00m*	*135.00m*	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*	.....	.....	19.89	24.25
Montreal	87.00a	94.00a	87.00a	88.00a	104.00a	125.00a	.....	.....	.....	122.00	122.00	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*170.00*	*170.00*	*170.00*				
New Orleans	89.00	89.00	93.00	91.00	90.00	97.00	121.50	.....	.....	151.00	151.00	18.72	22.80
	115.00	*115.00*	*104.50*	*125.00*	*125.00*	*125.00*	*137.50*	*137.50*	*157.50*				
New York	110.00	111.00	119.00	121.00	121.00	125.00	.....	.....	.....	240.00	250.00	25.92	31.60
	.....	.....	*120.00*	*120.00*	*120.00*	*122.00*	*164.00*	*164.00*	*164.00*	.....	.....	.....	.....
Philadelphia	Range from 100/120					105/125	105/125	.....	.....	214/224	214/224	28.00	32.00
	Range from 110/140					*115/145*	*125/150*	*158.00*	*168.00*	.....	.....	.....	.....
Pittsburgh	115.00	120.00	130.00	120.00	125.00	130.00	150.00	.....	.....	150.00	185.00	25.92	31.60
	140.00	*120.00*	*140.00m*	*150.00*	*150.00*	*150.00*	*220.00*	*190.00*	*190.00*	.....	.....	.....	.....
St. Louis	118.00	120.00	128.00d	128.00d	128.00e	133.00e	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*138.00*	*136.00e*	*136.00e*	*138.00e*	*190.00e*	*190.00e*	*190.00*	.....	.....	.....	.....
San Francisco	*85.00*	*85.00*	*88.00*	*88.00*	*88.00*	*88.00*	*99.00*	*118.00*	*118.00*	.....	.....	12.22	14.91
Seattle	*65.00*	*68.00*	*78.00*	*78.00*	*78.00*	*78.00*	*80.00*	*90.00*	*90.00*	.....	.....	.....	.....
Toronto	92.50a	93.50a	93.75a	86.00a	89.00a	89.00a	99.00a	.....	.....	90.00a	.....	.....	.....
	108.00	*106.00*	*109.00*	*113.00*	*119.00*	*119.00*	*135.00*	*138.00*	*138.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd., truckload lots, 5/6 Mftbm 4. Pine truckiots, f.o.b. city; fir truck lots, f. o. b. yard. 5. For f. o. b. city price, add approx. $8 for pine, $35.00 for fir.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. [a] Spruce. [b] Federal tax exempt, add 6% mun. & prov. tax. [c] 5M lots. [d] 8, 10, & 12 ft. lengths. [e] 8 to 16 ft. lengths. [f] Hemlock [g] No. 1 common. [j] 8 ft. lengths. [k] No. 3 common. [l] Add 2% sales tax. [m] Up to 16'; No. 3 western pine, $125. [n] Less 2% disc. 10 days. [o] Less 2% disc. 10th. [p] Less 1% disc. 10 days.

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, interior, moisture resistant, ¼", $161.00; ¾", $185.00. Exterior, waterproof, ¼" $165.00; ¾", $185.00. For other centers add rail freight increment from table on proper size. [a] Lower rate by water shipment. [b] 50,000 lbs. minimum. [c] Truck lots.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950a

	Single or Double Strength A quality	Single or Double Strength B quality
Atlanta	73%c	79%k
Baltimore	74%d	76%d
Birmingham	82%f	82%f
Boston	72–10%	72–10%
Chicago	72%	72%
Cincinnati	74%	74%
Cleveland	74-2–10%	74-2–10%
Dallas	76%	76%
Denver	73.5%	73.5%
Detroit	74–10–10%	74–10–10%
Kansas City	76–10–10%	76–10–10%
Los Angeles	70%	76%e
Minneapolis	71–10%	71–10%
Montreal	40–6–5%bc	40–6–5%
New Orleans	76%g	76%g
New York	79%l	79%l
Philadelphia	74–10%	75–10%
Pittsburgh	72%	72%
St. Louis	72–10–10%	72–10–10%
San Francisco	60%	73%
Seattle	$8.85/11.55hi	$6.41/8.67hj

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Atlanta	$0.2615
Baltimore	.2615
Birmingham	.2465
Boston	.2615
Chicago	.2615
Cincinnati	.2615
Cleveland	.3015
Dallas	.2690
Denver	.2665
Detroit	.2615
Kansas City	.2665
Los Angeles	.2640
Minneapolis	.2665
Montreal	23.45h
New Orleans	.2665
New York	.45g
Philadelphia	.2615
Pittsburgh	.2615
St. Louis	.2665
San Francisco	.2615
Seattle	.2640

Glass: [a] Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. [b] sales tax extra. [c] 77% for single strength. [d] From 6/15/52 list. [e] 77% for double strength. [f] Single strength; double strength, 83%. [g] From 8/1/58 list. [h] Ss/ds, 40-in. [i] 20 boxes min. [j] CL quantity. [k] eff. 12/58. [l] eff. 10/15/58.

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. [g] In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. [h] F.o.b. Bellowell (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $23.80 In fiber cases: forcite 40%, $23.20; forcite 60%, $24.95.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E of the Miss., except Fla and Me	$0.2065	$0.2465	$0.2615
W of Miss. to Rocky Mtn. States, Fla. and Maine	.2140	.2540	.2690
Rocky Mtn. States	.2140	.2540	.2690
Pacific N. W. States	.2065	.2465	.2615
Pacific S. W. States	.2065	.2465	.2615

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	..50/68	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.88/93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-fts	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-fts	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie box carloadi ots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood; Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	....	3.80a	.....	4.40a
New York	S. L. Sap Pine	2.00	4.00	3.00	6.00g
	Mixed Oak	2.50	4.50	3.50	6.50g
Philadelphia	Red Oak	2.85/4.05	4.40/4.60	3.20/3.40	4.40/4.60
St. Louis	Mixed Oak	2.65	3.40a	2.90h	3.75ah
San Francisco	Douglas Fir	2.12ej	3.10ef	2.99ef	4.52ca

Tr.—Treated; Untr.—Untreated. [a] Creosoted. [c] Empty cell. [e] Green f.o.b. cars. [g] 7 x 9 x 8' 6" * Add 75¢/tie freight charge to Birmingham. [h] 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21.20

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Connecticut**—BA On Or About 2/19—U. S. Eng., 310 State St., Springfield, Mass., road relocations A, B and D, Thomaston Dam, Naugatuck River, CIVENG-19-016-59-3. $1,000,000-$1,250,000. CD 9/19.

BUILDINGS—BA

Mass., Norton—HUMANITIES CLASSROOM BLDG.—BA 1/28—Wheaton College, Bd. Trustees, (selected list bidders), humanities classroom bldg. $400,000. Rich & Tucker Assoc., 45 Newbury St., Boston, archts.

▲ **Conn., North Haven**—SCHOOL—BA 1/30—Town, School Bldg. Comm., Town Hall, 1 story Junior High School, Bailey Rd., $2,000,000. Plans deposit $100. Schilling & Goldbecker, 18 Trumbull St., Hartford, archts. Hubbard, Lawless & Blakeley, 110 Whitney Ave., engrs. CD 8/15.

▲ **Conn., Norwalk** — SCHOOL — BA 1/30 — Town, City Clerk, City Hall, South Norwalk, Brian McMahon Junior High School, incl. general constr. and site work. $3,855,250. Plans deposit $100. Extended date. Lyons & Mather, 211 State St., Bridgeport, archts. Paul D. Harrigan, 909 Whalley Ave., New Haven, engrs. CD 12/16.

Conn., Fairfield—SYNAGOGUE—BA 2/7—Cong. Ahavath Achim, 725 Hancock Ave., Bridgeport, synagogue, school and social hall, Stratfield Rd. $450,000. Victor Civkin, 12 Ermine St., archt. CD 11/28.

HEAVY CONSTRUCTION—LB & CA

▲† **Five Boro Constr. Co.,** 2 Lafayette St., New York, N. Y., LB $1,341,560 est. $1,543,895, central heating plant addns., Loring Air Force Base, ENG-19-016-59-28, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Jan. 7. CD 12/12.

▲ **NEW HAMPSHIRE**—Dpt. P. Wks. & Hys., Concord, Bids opened 1/8,

N. H.—W. H. Hinman, Inc., 58 Main St., Westbrook, Me. LB $2,147,011 (8 bidders) hot b. conc. 1.913 mi. roadway, two 66 ft., two 47 ft. and two 78 ft. steel beam bridges, Bethlehem and Littleton, Grafton Co.

N. H.—Cooke-Ross, Inc., 257 Main St., Torrington, Conn. LB $283,556 (5 bidders) hot b. conc. 0.39 mi. Andover, Merrimack Co. CD 12/31.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I. CA $2,387,882, est. $3,051,830, section Western Expressway, incl. 4 bridges, FA Proj. U-360 (1), Fall River. Bids Dec. 16. CD 12/18, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston

S. & M. Constr. Co., Inc., 30 Salmon St., Providence, R. I., LB $536,241 est. $587,659—Contr. 6—Interstate Hy. 95E. FA Proj. 1-95E-3(7)5, Swansea. CD 12/11.

BUILDINGS—LB & CA

▲ **The Rust Engineering Co.,** 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., CA $15,000,000, design and construct Kraft Pulp MILL, RUMFORD, ME. Oxford Paper Co., Rumford, Me.

Joseph Maggiroie & Sons, 101 Hicks Ave., Medford, Mass. LB $499,974, SUPERMARKET, MANCHESTER, N. H. Ferretti's Supermarket, 1157 Elm St., Manchester, N. H. Bids Jan. 7. CD 12/1.

Columbia Constr. Co., 11 Hanover St., Malden, Mass., CA $564,000. U58-1 Contr. 1, MAINTENANCE BLDG. for University of Massachusetts, AMHERST, MASS. Commonwealth of Mass., University of Mass., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Nov. 26. CD 12/2, under LB.

▲ **Joseph L. Muscarelli, Inc.,** Essex St. and Rte. 17, Maplewood, N. J. CA Est. $1,850,000, MOTEL and COMMUNITY CENTER, PLYMOUTH, MASS. A. Wendell Drollett, Bradford Rd., Duxbury, Mass. and John Talcott, Jr., Talcottville, Conn. Charles Stevens Deleeck, 3113 McKinney Ave., Dallas, Tex., archts.

Freebow Constr. Co., 30 Colony Rd., Springfield, Mass., CA Est. $500,000, NURSING HOME, AGAWAM, MASS. Crestview Convalescent & Nursing Home, c/o Contractor, 30 Colony Rd., Springfield, Mass.

Henry P. Imbres, 83 Greenwich Ave., Greenwich, Conn., Owner Builds, $450,000, SHOPPING CENTER, BANKSVILLE, CONN.

Sunnyside Acres, Wintergreen Ave., Hamden, Conn., Owner Builds, $780,000, 78 HOUSES, "Sunnyside Acres", Wintergreen Ave., HAMDEN, CONN.

J. Anthony Probst, Dick Pond Rd., Saugatuck, Conn., Owner Builds, $900,000, 60 HOUSES, "Saugatuck Harbor", Duck Pond Rd., SAUGATUCK, CONN. Evan H. Harding, Cross Highway, Westport, Conn. engr.

E. & F. Constr. Co., 94 Wells St., Bridgeport, Conn., CA $467,093 ELEMENTARY SCHOOL, Wolff Property, SHELTON, CONN. Town, Town Hall, Shelton, Conn. Val Carlson, 433 Howe Ave., Shelton, Conn., archt. Bids Dec. 22. CD 11/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. J., Pennsville**—BA 2/9—Lower Penns Neck Twp. Sewerage Auth., Municipal Bldg., 90 North Broadway, Contr. 1G, primary sewage treatment plant, main pumping station, etc.; Contr. 1E, electrical work; Contr. 1H, heating and ventilating; Contr. 1P, plumbing work; Contr. 1S, structural steel and misc. metal work, etc.; Contr. 2, 29,370 ft. 8-in., 24-in. sewer; Contr. 3, 27,720 ft. 8-in., 18-in. sewers; Contr. 4, 32,810 ft. 8-in. sewer; and Contr. 5, 7,970 ft. 8-in. sewer, 4,700 ft. 6-in. force mains, constr. 6-in. force main crossing the New Jersey Turnpike and the Salem Canal. Plans deposit $50 each. Bogert & Childs, 145 East 32 St., New York 16, N. Y., consult. engrs. CD 10/17.

▲ **N. J., Wrightstown**—SHOPS, etc.—BA 2/17—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., 2 shops, 1 shop addn., utilities and paving, McGuire Air Force Base, ENG-36-109-59-26. $3,500,000. Bauer & Corbett, 60 Park Place, Newark, archts. CD 9/8.

▲ **Pa., Media**—BA 2/24—Delaware County Incinerator Auth., Courthouse Annex, Media, incinerator, Chester Twp. $2,000,000. Damon & Foster Assocs., Chester Pike and High St., Sharon Hill, engrs. Cotton, Pierce, Streander, Inc., 132 Nassau St., New York City, N. Y., assoc. consult. engrs. (Correction—bid date). CD 1/7.

BUILDINGS—BA

▲ **Del., Wilmington**—SCHOOL—BA 1/28—Henry C. Conrad School Dist., Woodcrest Dickinson High School, $4,313,000. Extended date. Pope & Kruse, 1116 West St., archts. CD 1/7.

† **N. J., Teaneck**—POST OFFICE—BA 1/30—Office of the Assistant Postmaster General, Bureau of Facilities, Post Office Dpt., 12 St. and Pa. Ave. N.W., Wash. 25, D. C., post bldg., Cedar Lane and Palisade Ave. $402,000. CD 11/7/56.

N. J., Maple Shade—SCHOOL—BA 2/2—Bd. Educ., Mill Road Elementary School addns. and alterations, and elementary school. $450,000. Faint & D'Anastasio, 5521 Westfield Ave., Pennsauken, archts. CD 9/29.

▲ **Pa., Schwenksville**—SCHOOL—BA 2/2—Schwenksville Area Jt. School Auth., Junior High School addn. incl. sewerage sys. $1,000,000. Plans deposit $25. John S. Carver, 2112 Spruce St., Phila., archt. Robert McLaughlin, 1411 Walnut St., Phila., engr. CD 7/25.

Pa., Perkasie—CHURCH, etc.—BA 2/16—Dana W. Gangewere, archt.-engr., 147 N. 5th St., Reading, church and educational bldg. for Peace Tohickon Lutheran Church, 424 Vine St. $400,000. CD 10/31.

▲ **N. Y., Astoria**—SCHOOL ADDN.—BA 2/17—Supt. School Bldgs., Bureau of Constr., 4th Floor, 42-15 Crescent St., Long Island City, Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for new addn. to and modernization of existing Junior High School 141, 21st Ave. and 37th St. Plans deposit $25 general, $10 mechanical trades, plumbing and drainage, $6 heating and ventilating, $15 electrical work. CD 7/23/57.

▲ **Pa., Phila.**—POST OFFICE, etc.—Bids Asked—Post Office Dpt., 30th St. Post Office, (selected list of bidders) purchase site and erect post office and transportation bldg., 30th and Chestnut Sts. (lease to govt. for 50 years). $2,000,000. Bellante & Clauss, 810 Rittenhouse Square, archts. CD 6/23/55, under Public Buildings.

BUILDINGS—SLC

▲ **D. C., Wash.**—DPT. STORE—Lord & Taylor Division Associated Dry Goods Corp., 424 5 Ave., New York, N. Y. soon lets contract 2 story, 130,000 sq. ft. department store, restaurant, parking area, Western Ave. Over $1,000,000. Fordyce & Hamby, 70 W 40 St., New York, N. Y., archts. Strobel & Salzman, 70 W. 40 St., New York, N. Y., engrs.

▲ **Pa., Morrisville**—HEARTH SHOPS, etc.—U. S. Steel Corp., 525 Williams Penn Pl., Pittsburgh, soon lets contract Open Hearth Shops 1 and 2 addns. and also railroad sidings. $1,000,000.

Pa., Phila.—PLANT—M. Levin & Co., 120 Spruce St., soon lets contract banana processing plant and paving at Phila. Food Distr. Center. $500,000. The Ballinger Co., 1625 Race St., archt.-engr. CD 6/20.

Pa., Phila.—SCHOOL—Ravenhill Academy, 3480 W. School House Lane, soon lets contract high school and dormitory bldg. $750,000. Stickle & Assocs., 134 Narberth Ave., Narberth, archts.-engrs. CD 12/17.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., State Office Bldg., Albany,

The Grandview Constr. Corp., 740 S. Fulton, Mt. Vernon, N. Y., CA $1,878,718 est. $2,059,000, reconstr. 3.33 mi. section Rte. 28 and 1.47 mi. access roads, from Ulster-Delaware County line to Big Indian, incl. nine span 591 ft concrete viaduct at Pine Hill, Ulster Co. Bids Oct. 30. CD 10/31, under LB.

Christopher Constr. Co., 3150 Valleyview Dr., Columbus, O., LB $628,456, Section F-sewage treatment plant for Gates-Chili-Ogden Sewer Dist., ROCHESTER, N. Y. Monroe County Sewer Agency, Rm. 407, 65 Broad St., Rochester, N. Y. Bids Dec. 23. CD 11/27.

† **Araco Co.,** 918 W. Courtland St., Phila., Pa., CA $598,487, access aprons and maintenance dock floor slab and utilities, McGuire Air Force Base, ENG-36-109-59-19, WRIGHTSTOWN, N. J. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., Bids Dec. 30, CD 1/7, under LB.

▲† **American Dredging Co.,** 12 S. 12th St., Phila., Pa. LB $3,481,000, dredging 590,000 cu yd. from Delaware River, Bucks Co., Pa. and Burlington Co., N. J., ENG-36-109-59-34, PENNSYLVANIA and NEW JERSEY. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Jan. 6. CD 12/10.

▲ **H. I. Lewis Constr. Co.,** 43 E. Main St., Middletown, Pa. CA $1,047,292. Scranton Flood Control Proj. Unit No. 2, Roaring Brook, concrete work and steel reinforcement, Scranton, Lackawanna Co., PENNSYLVANIA. Pa. Dpt. Forests & Waters, 512 Educ. Bldg., Harrisburg, Pa. Bids Nov. 25. CD 12/1, under LB.

Seabright Constr. Co., Wheeling, W. Va. LB $452,079, est. $750,000. Ryerston Station Dam on North Fork of Dunkard Fork of Wheeling Creek, Richill Twp., Greene Co., PENNSYLVANIA. Pa. Dpt. Forests & Waters, 512 Educ. Bldg., Harrisburg, Pa. Bids Jan. 6. CD 12/23.

PENNSYLVANIA—Pa. Hys. & Bridge Auth., 506 North Office Bldg., Harrisburg,

No. 1 Contracting Corp., 800 Exeter Ave., West Pittston, Pa. CA $773,585, 4 lane concrete divided hy. with 60 ft. wide earth median; 1 bridge, 3 concrete arches, service roads (FAI) Penn-Can Hy. section 1A, Near Clarks Green Borough 1.1 mi. Lackawanna Co. Bids Dec. 19. CD 12/23, under LB.

▲ **Public Constructors,** P. O. Box 247, Gloucester, N. J. CA $1,226,118, Alt. Bid. 1, reconstr. part of existing runway and site preparation work for new 5,000 ft. runway, ALLENTOWN, PA. Lehigh Northampton Airport Auth., Courthouse Annex, 523 Hamilton St., Allentown, Pa. Bids Nov. 12. CD 12/10, under LB.

† **MARYLAND and VIRGINIA** — Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va., Bids opened 1/8,

Norfolk Dredging Co., P.O. Box 539, Norfolk 1, Va., LB $483,890 (6 bidders) Contr. 1, Woodrow Wilson Memo-

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West
PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

rial Bridge, under water excav. at embankment sites, Prince George's Co. CD 12/16.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore 2, Bids opened 1/6,

Md.—**Rockville Constr. Co.**, Rockville, Md., LB $424,848 (8 bidders) dual 3 span, 78 ft., 85 ft., 78 ft. steel beam bridges on relocated Rte. 4 over Western Branch, Upper Marlboro P 735-7-320, Prince George's Co.

Md.—**G. A. & T. C. Nagman**, Dallastown, Pa., LB $168,802 (8 bidders) 3 span, 51 ft., 51 ft., 31 ft., 40 ft. roadway steel beam bridge over ramps, State Rte. 70 southeast of Hancock, W-463-16 & 17-623, Washington Co. CD 12/29.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore 2, Bids opened 1/6,

Md.—**Dean & Beavers**, Hollywood, Md., LB $430,107 (4 bidders) grading, drainage, surf. 5.05 mi. Rte. 234, Budds Creek to Chaptico, SM 318-1-520, St. Mary's Co.

Md.—**Eugene Chaney**, Upper Marlboro, Md., LB $327,222 (4 bidders) grading, drainage, surf. 2.837 mi. Rte. 202 at Largo, P 755-3-320, Prince George's Co. CD 12/29.

Corson & Gruman, 33 and K Sts. N.W., Wash., D. C., CA $698,790, repairing asph. pavements and concrete bases at various locations (1st Spring asph. repair contract) WASH., D. C. D. C. Govt. Dpt. Hys., 400 Pa. Ave., N. W., Wash., D. C Bids Dec 19, awarded Jan. 8. CD 12/30, under LB.

▲ **DELAWARE**—State Hy. Dpt., Rm. 202, Hy. Admin. Bldg., Dover,

James Julian, Inc., 405 DuPont Rd., Elsmere, Del., CA $1,390,974 constr. new approaches to Delaware Memorial Bridge West Farnhurst, Del., New Castle Co. Bids Dec. 3, CD 12/5, under LB.

BUILDINGS—LB & CA

▲ **A-Jay Realty Co.**, c/o Kavy & Kavoitt, archts., 44 Court St., Brooklyn 2, N. Y., Owner Builds, $2,160,000, three 6 story APARTMENTS, Beach 59 St., southeast corner and southwest corner of Beach Channel Dr., Beach 57 St., northwest corner of Arverne Blvd., ARVERNE, N. Y. CD 4/16/54.

188 Holding Corp., 188 Kings Point Rd., Great Neck, N. Y., Owner Builds, $450,000, 25 HOUSES, East 108th St. and Avenue J, BROOKLYN, N. Y. Morris Rothstein & Sons, 186 Joralemon St., Brooklyn 2, N. Y., archts.

Pilgrim Realty Corp., 16 Court St., Brooklyn 2, N. Y., Owner Builds, $670,000, 6 story APARTMENT, garage, 270 Clarkson Ave., BROOKLYN, N. Y. Kavy & Kavovitt, Inc., 44 Court St., Brooklyn 27, N. Y., archt. CD 11/18.

Vicbar Constr. Corp., 17 Neptune Ave., Brooklyn 29, N. Y., Owner Builds, $486,000, 27 HOUSES, 1402-72 E. 101st St., BROOKLYN, N. Y. Morris Rothstein & Sons, 186 Joralemon St., Brooklyn 2, N. Y., archts.

W. W. & W. Constr. Corp., 320 Broadway, New York 7, N. Y., Owner Builds, $606,000, 6 story APARTMENT for 101 families, incl. Garage, 7002-24 Bay Parkway, BROOKLYN, N. Y. Kavy & Kavovitt, Inc., 44 Court St., Brooklyn 2, N. Y., archt. CD 11/19.

Bainbridge Towers, Inc., 110 E. 117th St., New York 35, N. Y., Owner Builds, $500,000, 6 story APARTMENT, east side Bainbridge Ave. north of 194th St., NEW YORK, N. Y. H. Herbert Lilien, 201 W. 72nd St., New York 23, N. Y., archts. CD 8/29.

Barker Holding Corp., 1136 Castle Hill Ave., New York 61, N. Y., Owner Builds, $425,000, 6 story APARTMENT, west side of Barker Ave. between Thwaites and Reiss Places, NEW YORK, N. Y. H. Herbert Lilien, 201 W. 72nd St., New York 23, N. Y., archts. CD 8/18.

Blitman Constr. Corp., 101 Park Ave., New York 17, N. Y., CA $400,000, SUPERMARKET and RESTAURANT, 580-98 Lenox Ave., NEW YORK, N. Y. East Dell Realty Corp., 30 W. 141 St., New York, N. Y. Leo V. Gerger, 356 Fulton Dr., Brooklyn 1, N. Y., archt. CD 11/19.

▲ **Jackson A. Edwards & Sidney Kramer**, 545 Madison Ave., New York, N. Y., Owner Builds, $1,000,000, APARTMENT, 13-17 W. 12th St., NEW YORK, N. Y. H. I. Feldman, 415 Lexington Ave., New York 17, N. Y., archt. CD 10/25.

Joaneff Realty Corp., 19 W. 44th St., New York 36, N. Y., Owner Builds, $725,000, 15 story APARTMENT, 227 Third Ave. and 201 E. 19th St., NEW YORK, N. Y. H. I. Feldman, 415 Lexington Ave., New York 17, N. Y., archt. CD 8/29.

▲ **Perfect Holding Corp.**, 349 E. 149th St., New York 51, N. Y., Owner Builds, $1,300,000, 6 story APARTMENT, west side of Hudson Manor Terrace, north of 236th St., Bronx Boro, NEW YORK, N. Y. H. Herbert Lilien, 201 W. 72nd St., New York 23, N. Y., archts. CD 11/18.

▲ **Third and Thirty-Fifth Corp.**, 19 W. 44th St., New York 36, N. Y., Owner Builds, $1,900,000, 14 story APARTMENT, 1328-42 Second Ave. and 301-3 E. 70th St. and 300-4 E. 71 St., NEW YORK, N. Y. H. I. Feldman, 415 Lexington Ave., New York 17, N. Y., archt. CD 8/25.

Thomas A. Racine, 1334 E. Gun Hill Rd., New York 67, N. Y., Owner Builds, $450,000, 30 HOUSES, Gunther and Givan Aves., Bronx Boro, NEW YORK, N. Y. Michael Alfano, 1332 E. Gun Hill Rd., New York 67, N. Y., archt.

Idle Acres, Inc., 311 N. Delsea Dr., Clayton, N. J., Separate Contracts, $600,000, 40 unit RESIDENTIAL DEVELOPMENT, Royal Ave., etc., CLAYTON, N. J.

Lumar Constr. Co., 1604 Walnut St., Phila., Pa. CA $750,000. 68 RESIDENTIAL DEVELOPMENT, paving, water and sewer mains, BENSALEM, PA. Avondale, Inc., c/o Morris Spiegel, 1604 Walnut St., Phila., Pa. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **Navarro Corp.**, 6219 Broad St., Pittsburgh, Pa., CA Total Est. $10,000,000, RESEARCH CENTER, MONROEVILLE, PA. Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa. Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, N. Y., archts. CD 6/7/56.

▲ **Frank H. Wilson Co.**, 125 Coulter Ave., Ardmore, Pa. CA $1,116,352. general constr. ELEMENTARY SCHOOL, 49th and Parrish Sts., PHILA., PA. Bd. Educ., 21st and Parkway Sts., Phila., Pa. Bids Dec. 19. CD 12/30, under LB.

▲ **A. Jacobson & Sons**, 2112 Sansom St., Phila., Pa. CA $1,000,000. CHURCH, PHILA., PA. Church of the Lord Jesus Christ, 22nd and Bainbridge Sts., Phila., Pa.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. CA $4,732,000, 570 unit low rent APARTMENTS, Hawthorne Square, 13th and Fitzwater Sts., PHILA., PA. Phila. Housing Auth., 42 S. 15th St., Phila., Pa. Bids Nov. 26. CD 12/5, under LB.

David Warren Constr. Co., 370 Montgomery Ave., Merion, Pa. Separate Contracts. $504,000. RESIDENTIAL DEVELOPMENT, Verree Rd., etc., PHILA., PA. Jack Swerman, 405 Market St., Chester, Pa., archt.

▲ **Hill & Kimmel, Inc.**, 8248 Georgia Ave., Silver Spring, Md., LB $1,306,774, Base Bid (7 bidders) Gaithersburg JUNIOR HIGH SCHOOL, Gaithersburg, ROCKVILLE, MD. Montgomery Co. Bd. Educ., Rockville, Md. Bids Jan. 8. CD 12/17.

▲ **Hegeman & Harris, Inc.**, 30 Rockefeller Plaza, New York, N. Y., CA $1,289,564, constr. HEADQUARTERS BLDG. Virginia Ave. and 24 St. N. W., WASH., D. C. American Assocs., University Women, 15534 Eye St. N. W., Wash., D. C. Bids Dec. 5. CD 12/9, under LB.

McCloskey & Co., 1620 W. Thompson St., Phila., Pa. CA $741,000 foundation work for CAPITOL EXTENSION, WASH., D. C. Architect of the Capitol, U. S. Capitol, Wash., D. C. Awarded Jan. 5. CD 12/18, under LB.

▲ **William P. Lipscomb Constr. Co.**, Washington Bldg., Wash., D. C., LB $3,000,000 (8 bidders) 8 story OFFICE, WASH., D. C. American Chemical Society, 16 and M Sts. N.W., Wash., D. C. Bids Jan. 6. CD 12/11.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Kentucky and Indiana**—BA 2/3—U. S. Eng., P. O. Box 59, Louisville, Ky., wid'n. existing canal, constr. guide wall, misc. structures and demolition of bridge Dam 42, Ohio River, CIVENG-15-029-59-43. Over $4,000,000. CD 1/6.

BUILDINGS—BA

S. C., Clemson—DORMITORY—BA 2/6—Clemson College, Clemson, dormitory, $425,000. Plans deposit $50. Lyles, Bissett, Carlisle & Wolff, 1321 Bull St., Columbia, archts.

▲† **Va., Fort Lee**—ACADEMIC—BA 2/12—U. S. Eng., foot of Front St., Norfolk, 2 story, bsmnt., composite steel, concrete with brick faced concrete masonry block, curtain walls, etc., Quartermaster Academic Bldg., incl. utilities, grading, paving, ENG-44-110-59-17. $2,300,000. CD 1/7.

▲ **N. C., Greenville**—DORMITORY—BA 2/18—East Carolina College, Greenville, 949,134 sq. ft. (520 men) dormitory. Plans deposit $60. Eric G. Flannagan & Sons, Young St., Henderson, archts.

▲ **Ky., Lexington**—DORMITORY—BA 2/25—Commonwealth of Ky., Div. Purchases, Frankfort, 3 story, bsmnt., brick, stone 514-bed men's dormitory for University of Kentucky. $1,750,000. John F. Wilson & Assoc., 508 E. Main St., archts. Proctor Ingles, 915 S. Limestone, engr. CD 5/26.

▲ **Ky., Lexington**—MEDICAL CENTER—BA 3/25—Commonwealth of Ky., Div. Purchases, Fraankfort, Phase 3, medical center, incl. (A) hospital (B) out-patient clinic (C) ambulant wing and nurses quarters (D) parking area for University of Kentucky. $10,000,000. Plans deposit $150, refundable. Meriwether, Marye & Assoc., 248 E. Short St., archts. Ellerbe & Co., 1st National Bank Bldg., St. Paul 1, Minn., engrs. CD 6/6/57.

BUILDINGS—SLC

▲ **Fla., Miami**—HOSPITAL—Miami Baptist Hospital, Inc., 1324 West Flagler St., soon lets contract 242-bed hospital, N. Kendall Dr. and SW 88 Ave. Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, Ala., archts. Charles Payne & Assocs., 4100 N. Miami Ave., engrs. Dr. Frank Tripp, Sr., 4005 State St. Dr., New Orleans, La., hospital consultant. Bids Oct. 13 rejected. LB $4,373,281. CD 11/5, under LB.

HEAVY CONSTRUCTION—LB & CA

Patterson & Ford Constr. Co., 2717 31st Ave. N., Birmingham, Ala., LB $499,959, natural gas distribution sys., MONROE, N. C. City of Monroe, City Hall, Monroe, N. C. Bids Jan. 1.

▲† **Main-Linden Corp.**, 503 First National Bank Bldg., Dallas, Tex., CA $1,500,000, Air Route Traffic Control Center, HAMPTON, GA. General Services Admin., 57 St. N.E., Atlanta, Ga. Bids Oct. 17.

FLORIDA—State Rd. Dpt., Tallahassee,

Noonan Constr. Co., Drawer 470, Pensacola, Fla., CA $924,128, 2,640 ft. main channel bridge, 27 prestressed concrete beams etc. 0.609 mi. SR S-299 bridge over Santa Rosa Sound south, SR 30 (US 98) near Navarre, State Proj. Job No. 58640-3601, Santa Rosa Co., Bids Dec. 16. CD 12/19, under LB.

▲ **FLORIDA**—State Rd. Dpt., Tallahassee,

Noonan Constr. Co., Drawer 470, Pensacola, Fla., CA $3,375,720, 4-lane 9 in. concrete pavement, sand-clay base Type 1 b. conc. surf. course, Type 1-A surf. tr., drainage structures, six hy. grade separation bridges, 5.98 mi. FAI Proj. No. 0-10-1(3) 5 Job No., 48260-3402 SR 8, Escambia Co. Bids Nov. 21, CD 12/1 under LB.

† **J. Hilbert Sapp Inc.**, 1905 N. Orange Ave., Orlando, Fla., CA $546,953, readiness crew bldg., ENG-08-123-59-20, HOMESTEAD AIR FORCE BASE, FLA. U. S. Eng., Box 4970, Jacksonville, Fla. Bids Dec. 4. CD 12/15.

City, City Hall, Opa Locka, Fla., rejected bids Jan. 8, road program, Proj. 904, OPA LOCKA, FLA. $500,000. CD 12/30.

▲† **James J. Craggs Constr. Co.**, Box 22, Gainesville, Fla., LB $1,998,670, est. $2,220,257 apron operational utilities and hazard removal, McCoy Air Force Base, ENG-08-123-59-18, ORLANDO, FLA. U. S. Eng., Box 490, Jacksonville 1, Fla. Bids Dec. 23. CD 12/9.

ALABAMA—Director State Hy. Dpt., Montgomery, Bids opened 12/20,

Ala.—**A. E. Burgess Co., Inc.**, 3700 10 Ave. N., Birmingham, Ala., LB $484,470 bridges, approaches 1.638 mi. at Garden City, Blount and Cullman Counties;

Ala.—**C. F. W. Constr. Co., Inc.**, Fayetteville, Tenn., LB $199,159 underpass and approaches 0.416 mi. on Alabama 91 under L.&N. R.R., northeast of Hanceville, Cullman Co., CD 12/15.

ALABAMA—Director State Hy. Dpt., Montgomery, Bids opened 12/30,

Burgreen Contg. Co., Athens, Ala., LB $544,660 grading, drainage 13.999 mi. road from Moulton to Colbert Co. Line toward Tuscumbia, Lawrence Co. CD 12/15.

† **Wm. M. Cowgur & Co., Inc.**, 721 Olive St., St. Louis, Mo., LB $573,658, est. $604,692 (5 bidders) repairing Sabine Pass East Jetty, Cameron Parish, Inv. No. CIVENG-41-243-59-35, LOUISIANA. U. S. Eng., Santa Fe Bldg., Galveston, Tex. Bids Jan. 6. CD 12/24.

T. L. James & Co., Inc., Box 531, Ruston, La., LB $969,796 (4 bidders), Prop. No. 1040, apron work at Moisant International Airport (west half), Kenner, NEW ORLEANS, LA. City, City Hall, New Orleans, La. Bids Jan. 5. CD 12/24.

† **Phillips & Jordan, Robbinsville, N. C.**, LB $522,368, est. $484,010 (8 bidders) clearing Rough River Reservoir Area, CIVENG-15-029-59-53, KENTUCKY. U. S. Eng., P.O. Box 59, Louisville 1, Ky. Bids Jan. 9. CD 12/23, under LB.

BUILDINGS—LB & CA

▲ **Tidewater Constr. Corp.**, 538 Front St., Norfolk, Va., CA $1,500,000. Manganese Ore Processing PLANT, Rte. 168, NEWPORT NEWS, VA. Union Ore Corp., Div. Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y. Western Knapp Engineering Co., 50 Church St., New York, N. Y., engr.

John Crosland, 122 E. 3 St., Charlotte, N. C. Own Forces, $500,000. 50 RESIDENCES, Spring Valley Subdivision, CHARLOTTE, N. C.

Ervin Constr. Co., 3400 Rozells Ferry Rd., Charlotte, N. C. Own Forces $500,000, 50 RESIDENCES. Starmount Subdivision, CHARLOTTE, N. C.

▲ **Simmons Realty Co.**, 9 Broad St., Charleston, S. C. Separate Contracts. $2,750,000. 275 RESIDENCES, CHARLESTON, S. C.

▲ **Congaree Constr. Co.**, 3530 Colony Forest Dr., Columbia, S. C. CA $1,351,000. DEPARTMENT STORE addn., COLUMBIA, S. C. Belk's Dpt. Store, Main St., Columbia, S. C. Bids Dec. 18, awarded Jan. 8. CD 12/3.

M. B. Kahn Constr. Co., 1113 Blossom St., Columbia, S. C., CA Est. $500,000, three 48,000 sq. ft. MEN'S DORMITORIES, COLUMBIA, S. C. Columbia Bible College, Taylor St., Columbia, S. C. Bids Dec. 23. CD 3/23/56.

▲ **Daniel Constr. Co.**, 429 N. Main St., Greenville, S. C. CA Est. $3,000,000. 150,000 sq. ft. brick, steel MANUFACTURING PLANT and air-conditioning sys., GREER, S. C. Textron Inc., c/o contractor.

C. W. Blanchard Inc., A. Exchange St., Charleston, S. C., CA est. $500,000. CHURCH, MOUNT PLEASANT, S. C. Hibben Methodist Church, Hibben & Bennett Sts., Mount Pleasant, S. C.

Perdue & Williams, 790 Fulton St., Macon, Ga., CA $421,380, HOTEL Dempsey alteration, incl. GARAGE, MACON, GA. Block Corp., Civic Room, Dempsey Hotel, Macon, Ga. Bids Dec. 23. CD 12/12.

Paul L. Beck, 4914 1 Ave., St. Peterburg, Fla., LB $583,321, JUNIOR HIGH SCHOOL, Ballard Rd. and Clarice Ave., (East Fort Myers) FORT MYERS, FLA. Lee Co. Bd. P. Instruction, Ray Tipton, supt., Fort Myers, Fla., Bids Jan. 6, CD 12/19.

▲ **Heftler Constr. Co.**, 4102 NW 183 St., Miami, Fla. Owner Builds. $2,000,000, 235 one story, 40x50 CB-S RESIDENCES, NW 173 St. and NW 52 Ave. (Carol City), MIAMI, FLA. Gerber-Pancani & Crump, DuPont Plaza Center, Miami, Fla., archts.

▲ **Thompson-Polizzi Constr. Co.**, 298 Granello Ave., Coral Gables, Fla., LB $1,428,890, Ninety-Fifth St. SCHOOL, NW 95 St. and 18 Ave., MIAMI, FLA. Dade Co. Bd. P. Instruction, Admin. Bldg., 275 NW 2 St., Miami, Fla. Bids Dec. 7. CD 12/19;
W. F. Thompson Constr. Co., 3228 Ponce De Leon Blvd., Coral Cables, Fla., LB $889,999 Base Bid,

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Rockway Junior High School, SW 29 Terrace and SW 95 Ave. (Miami, Fla.).

▲ **Meadow Corp.,** Meadow Dr., Montgomery, Ala., Owner Builds, $1,800,000, 150 addnl HOMES, West DECATUR, ALA.

▲ **Jehle Bros., 1616** Mt. Meigs Rd., Montgomery, Ala., CA $1,500,000 DEPARTMENT STORE, MOBILE, ALA. C. J. Gayfer & Co. Inc., 12 St. Emanuel St., Mobile, Ala.

▲† **Kesk Inc.,** Derbigny St., New Orleans, La., LB $3,269,961, 200 Capehart Family HOUSING, Bossier Base, ENG-03-050-59-27, BOSSIER CITY, LA. U. S. Eng., P. O. Box 867, Little Rock, Ark. Van and Flaxman, Ward Bldg., Shreveport, La., archts. Bids Jan. 8. CD 12/1.

Gervais Favrot Co., 330 Balter Bldg., New Orleans, La. LB $619,169 (5 bidders), 4 story steel, concrete block AUTOMOBILE SALES bldg. addn., NEW ORLEANS, LA. Stephens Realty Corp., 840 Carondelet St., New Orleans, La. Freret & Wolf, 910 Chartres St., New Orleans, La., archts.

John Wile Constr. Co., Humler St., Louisville, Ky., CA Est. $700,000, steel skeleton, concrete slab, corrugated metal siding expansion to Portland Cement PLANT, KOSMOSDALE, KY. Kosmos Portland Cement Co., Starks Bldg., Louisville 2, Ky. Bids Dec. 23. CD 12/17.

Platoff Constr. Co., 501 Woodbine, Louisville, Ky., CA $529,000, 1959 addns. to Butler, Waggener and Durrett SCHOOLS, LOUISVILLE, KY. Jefferson Co. Bd. Educ., 618 W. Jefferson, Louisville 3, Ky. Bids Dec. 23. CD 12/12.

F. W. Owens Co., 119 N. 5th St., Louisville, Ky., CA Est. $500,000, 2 story, no bsmnt., 52,000 sq. ft. rein.-con., brick over concrete block WAREHOUSE and SALES BLDG., LOUISVILLE, KY. Motor Parts Depot, 724 S. Brook St., Louisville, Ky. Norman Sweets, 811 Republic Bldg., Louisville 2, Ky., archt. Carr Ray & Assoc., 304 W. Liberty, Louisville 2, Ky., engrs.

▲ **Larry Carrier Constr. Co.,** Bristol, Tenn. Owner builds. $1,500,000. SHOPPING CENTER $1,300,000. 130 RESIDENCES, BRISTOL, TENN.

▲ **Trammel Constr. Co.,** Bristol, Tenn. CA $2,068,000, Upper East Tennessee MENTAL HEALTH FACILITY, GREENVILLE, TENN. State Purch. Dpt., Nashville, Tenn. Bids Dec. 22, awarded Jan. 7. CD 10/7/57.

† **J. E. Green Co.,** P.O. Box 270, Johnson City, Tenn., CA $789,300, est. $600,000, HOSPITAL addn. at Veterans Admin. Center, MOUNTAIN HOME, TENN. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Jan. 6, awarded Jan. 7. CD 1/12, under LB.

MIDDLE WEST

BUILDINGS—BA

Ill., Downers Grove—SCHOOL—BA 1/27—School Dist. 58, 936 Warren St., Lester School and Pierce Downer School addns., Fairmont Grade school. $900,000. Fugard Burt Wilkinson & Orth, 520 N. Michigan Ave., Chicago, archts. CD 10/30.

▲ **Ind., Bloomington**—UNIVERSITY CENTER, etc.—BA 1/27—Indiana University, steel, rein.-con., masonry university center and auditorium, South Bend, $1,500,000. Roy A. Worden & Assoc., 222 S. William St., South Bend, archts. CD 10/2.

O., Canton — MEDICAL — BA 2/3 — Dartmouth Medical Bldg., Inc., 1912 Kirk Court N.W., 3 story, brick medical bldg. $500,000. Cooper Wade & Assoc., 10528 Wilbur Ave., Cleveland, Zone 6, archts. CD 9/23.

Ill., Waukegan—HOME—BA 2/25—County of Lake, 18 N. County St., 2 story, brick home for the aged, Libertyville. $500,000. Bruno Lunardi, 1866 Sheridan Rd., Highland Park, archt. CD 9/16.

▲ **Mich., Kalamazoo**—SCHOOL—BA 3/15—Bd. Educ., 306 E. Lovell St., 7 story, 205,000 sq. ft. steel frame school. $3,500,000. Perkins & Will, 309 W. Jackson Blvd., Chicago 6, Ill., archts. CD 11/18/57.

Ill., Woodstock—SCHOOL—BA 5/25—School Dist. 152, 1, 2 and 3 story, 67,000 sq. ft. high school. $895,000. Bradley & Bradley, 924 N. Main St., Rockford, archts. CD 10/10.

BUILDINGS—SLC

▲ **O., Cincinnati**—LIBRARY—Hebrew Union College, Clifton Ave., soon lets contract library. $1,500,000. Hall-McAllister & Stockwell, 706 Walnut St., Cincinnati, O., archts. CD 12/29.

O., Cincinnati—RELIGIOUS EDUCATION BLDG.—Louis Feinberg (Adath Israel) Synagogue, Reading Rd., soon lets contract religious education bldg. $650,000. Pepinsky, Grau, Schrand & Shorr, Union Trust Bldg., Cincinnati, O., archts. CD 2/5/57.

HEAVY CONSTRUCTION—LB & CA

Kunz Constr. Co., Ohio Pike (Tabasco), Cincinnati, O. CA $538,787, imprv. Corbly St. from Beechmont to east corporate line, CINCINNATI, O. City, City Hall, Cincinnati, O. Bids Nov. 12. CD 11/18, under LB.

▲ **City, Dpt. P. Wks.,** City Hall, Cleveland 4, O., rejected bids Nov. 20, reconstr. Jefferson Ave. bridge, CLEVELAND, O. LB $4,452,279. Will re-advertise. CD 11/25, under LB.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis, Zone 4.

Contracting & Materials Co., 1235 Dodge Ave., Evanston, Ill., CA $3,165,513, est. $3,548,419, rein-conc. pavement 6.895 mi. US 31, R-4458 I-03-1(5), Clark Co., Bids Sept. 30, Awarded Dec. 10, CD 10/7 under LB.

INDIANA—State Hy. Comn., John Peters, chn., State House Annex, Indianapolis,

Ind.—Winslow Constr. Co., Salem, Ind., CA $137,076, est. $145,944, continuous rein-conc. girder bridge

over I-03, US 31, on Co. Rd., 1.2 mi. N. of US 31W at Sellersburg, I-03-1(9) 31-B9-4137, Contr. 4411, Clark Co., awarded Dec. 15;

Ind.—**Smith & Johnson, Inc.,** 1799 Kentucky Ave., Indianapolis, Ind., CA **$510,969,** est. $535,931, rein-conc. arch twin structures over Muddy Fork Creek of Silver Creek, 2.8 mi. N. of USR 31W, I-03-1(10) 31-B9-2138, also rein-conc. arch (UF) over Elk Run Creek 1.8 mi. N. of US Rd. 31W, I-03-1(10) 31-B9-4142, Contr. 4412, Clark Co. Bids May 27, awarded Dec. 19. CD 5/6.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis, Zone 4,

Contracting & Materials Co., 1235 Dodge Ave., Evanston, Ill., CA **$3,085,796,** est. $4,100,193, rein-conc. pavement 6.468 mi. US 421, R-4545 I-05-3(1), Marion Co., Bids Aug. 26, Awarded Dec. 3, CD 9/2 under LB.

▲† **Huber, Hunt & Nichols, Inc.,** 2450 Stibbs Ave., Indiainapolis, Ind., LB **$1,410,000,** 2 story, 140 x 192 ft. steel frame, rein.-con. floors, masonry and steel panel walls traffic control tower, at Municipal Airport, S. High School Rd., INDIANAPOLIS, IND. Civil Aeronautics Admin., Air Route Traffic Control Center Bldg., Indianapolis, Ind., Bids Jan. 7, CD 12/31.

▲ **WISCONSIN AND MINNESOTA**—State Hy. Comn. of Wisconsin and Comr. Hys. of State of Minnesota, Room 622, State Office Bldg., Madison, Wis.,

Wis.-Minn.—**United State Steel Corporation,** 71 Broadway, New York 6, N. Y. CA **$2,334,943,** St. Louis Bay Superstructure metal work for Structure B-16-5 (Wis.) or 9030 (Minn.), Duluth-Superior Interstate Bridge, I.H. 35, Contr. 1, Proj. I-35-3 (19) 262, St. Louis Co., Minn., and Douglas Co., Wis. Bids Dec. 30.

Wis.-Minn.—**Wisconsin Bridge & Iron Co.,** 5023 N. 35 St., Milwaukee 9, Wis. CA **$658,738,** Howard's Pocket Superstructure metal work for Structure B-16-5 (Wis) or 9030 (Minn.), Duluth-Superior Interstate Bridge, I.H. 35, Contr. 2, Proj. I-35-3 (19) 262, St. Louis Co., Minn., and Douglas Co., Wis. CD 1/5, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

Holloway Constr. Co., 29350 Joy Rd., Livonia, Mich., CA **$1,810,798,** 6.1 mi. dual 24 ft. concrete roadways from 6th St. in Kalamazoo Co., westerly to Schussler Rd. in Van Buren Co., 4 mi. east of Paw Paw incl. 3 structures, Kalamazoo and Van Buren Counties. Bids Nov. 19. CD 12/3, under LB.

BUILDINGS—LB & CA

▲ **William E. Schultz,** 13355 E. Bagley Rd., Cleveland 30, O., Owners Forces, **$2,375,000,** 90 brick, frame HOMES, W. Sprague Rd. east of W. 130th St., PARMA, O.

▲ **A. Siegler & Sons,** 5117 Lee Rd., Bedford, O. Owners Forces, **$2,350,000,** 87 stone trimmed Preston Park HOMES, Sumpter Rd., WARRENSVILLE HEIGHTS, O.

Wilhelm Constr. Co., 3914 Prospect St., Indianapolis, Ind. CA **$784,016,** general contract HIGH SCHOOL, CONVERSE, IND. Oak Hill School Corp., Converse, Ind. Bids Dec. 23. CD 12/18.

▲† **Centex Constr. Co., Inc.,** 4606 Greenville Ave., Dallas 6, Tex. CA **$4,062,135,** 250 unit Capehart HOUSING, Bunker Hill Air Force Base, PERU, IND. Procurement Office, Bunker Hill Air Force Base, Ind. Bids Dec. 9, awarded Dec. 31. CD 12/16, under LB.

Sollitt Constr. Co., 301 Columbia St., South Bend, Ind., CA **$400,000,** ELEMENTARY SCHOOL and AUDITORIUM, SOUTH BEND, IND. St. Mary Catholic Parish, 431 Taylor St., South Bend, Ind. Belli & Belli, 6040 W. Fullerton Ave., Chicago, Ill., archts.

▲ **Kaplan Contractors, Inc.,** 3443 W. Belmont Ave., Chicago, Ill. CA **$1,500,000,** 100 unit MOTEL, Holiday Lodge, 4800-46 N. Marine Dr., CHICAGO, ILL. Owner, c/o Exchange National Bank, Trustee, 130 S. LaSalle St., Chicago, Ill. Louis T. Simon, 350 N. Clark St., Chicago, Ill., archt.

Mayfair Constr. Co., 5660 N. Kedzie Ave., Chicago, Ill. CA **$769,850,** 4 story, Richard E. Byrd Elementary SCHOOL, N. Sedgwick and W. Hill Sts., CHICAGO, ILL. Bd. Educ., 228 N. LaSalle St., Chicago, Ill. CD 12/31, under LB.

Fred Teitelbaum, 5526 Kedzie Ave., Chicago, Ill. CA **$600,000,** 15 story, bsmnt. 43 x 75 ft. concrete brick APARTMENT, 1234 W. Lake Shore Dr. CHICAGO, ILL. American National Bank, Trustee, 33 N. LaSalle St., Chicago, Ill. Barancik Conte & Assocs., 332 N. Michigan Ave., Chicago, Ill., archts.

▲† **Cheli & Anderson, Inc.,** 5425 N. Kedzie Ave., Chicago, Ill., LB **$1,372,590,** 2 BARRACKS, site development Spec. 14727/58, GREAT LAKES, ILL. Dist. P. Wks Office, Ninth Naval Dist., Bldg. 1-A, Great Lakes, Ill. Pace & Assocs., 53 W. Jackson Blvd., Chicago 4, Ill. archts. Bids Dec. 30. CD 12/23.

▲ **C. R. Meyer & Sons Co.,** 208 State St., Oshkosh, Wis., CA Est. **$4,000,000,** 60 x 340 ft. concrete, steel, brick, piles MACHINE ROOM, DE PERE, WIS., Nicolet Paper Co., Main Ave., De Pere, Wis.

WEST OF MISSISSIPPI

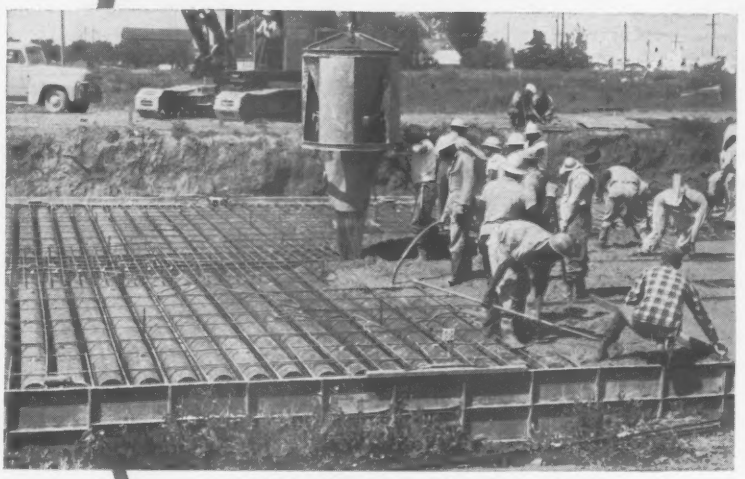
HEAVY CONSTRUCTION—BA

† **Nebraska**—BA 1/27—U. S. Eng., 1709 Jackson St., Omaha 2, agricultural levee unit R 520, Rulo, Richardson Co., ENG-25-066-59-55, $400,000-$500,000. CD 10/1, under LB.

▲† **South Dakota**—BA 2/25—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., relocation, bldgs. and facilities, Cheyenne River Indian Agency, Oahe Reservoir Proj. near Pierre, ENG-25-066-59-59. $1,200,000-$2,700,000. CD 9/23.

FIBRE TUBES

reduce weight of concrete floor slabs!



Sears-Roebuck Store, Hayward, Cal. Reynolds and Chamberlain, architects. Pregnoff and Mather, engineers. Hilp and Rhodes, contractors.

Use low-cost, easy-to-handle

Sonoco SONOVOID FIBRE TUBES

to form voids in concrete construction

Over 6000 feet of 9" O.D. SONOVOID Fibre Tubes were used to form voids in the slab floor of this Sears-Roebuck Store.

Total depth of the slab is 14" and length of span is 23 feet. In this instance the voided system was designed due to the short span with above normal loading. The fibre tubes eliminate dead weight by displacing low-working concrete at the neutral axis.

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BUILDINGS—BA

▲ **Kan., Manhattan**—HOSPITAL—BA 1/29—St. Mary's Hospital for Sisters of St. Joseph, 1 story air-conditioned hospital. $2,500,000. F. G. Wolfenbarger & Assocs., 501 Houston St., archts. CD 8/16/57.

▲† **N. M., Albuquerque**—ENGINEERING REACTOR FACILITY—BA 3/19—Atomic Energy Comn., Box 5400, engineering reactor facility, Sandia Base, Inv. No. 292-59-15. $1,000,000. Date advanced. Stearns Rogers, 660 Bannock St., Denver, Colo., project engr. CD 12/10.

BUILDINGS—SLC

Colo., Denver—SHOPPING CENTER—Alameda Shopping Center, S. Zuni St. and W. Alameda Ave., soon lets contract 1 story, 70,000 sq. ft. shopping center (second phase). $600,000. Simon & Hipp, 1922 E. 18 Ave., archts.

▲ **Colo., Littleton**—LABORATORY—Martin Co., 1250 South Highway 75, soon lets contract 2 story, bsmnt., 83,100 sq. ft. research laboratory. $2,500,000. Raymond H. Ervin & Assocs., 1500 Denver Club Bldg., Denver, archts. CD 12/29.

Tex., Lockhart—GOLDEN AGE HOME—Dist. Bd. Hospitals & Homes, Methodist Church, H. Brasher, Weimar, soon lets contract Golden Age Home. $400,000. Kiger & Littlefield, 2815 Exposition Blvd., Austin, archts.-engrs. CD 12/31.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

Barton Contg. Co., 411 Clifton Ave., Minneapolis, Minn., CA **$1,190,060,** misc. grading, grav. and concrete paving shouldering and plant-mixed bit. surf. 6.5 mi. near Pine Bend, Dakota Co. Bids Dec. 23. CD 12/30, under LB.

Dresser Engineering Co., Mid-Continent Bldg., Tulsa, Okla., CA Est. **$500,000,** 100 million cu. ft. per day natural gas absorption plant, FORGAN, OKLA. Warren Petroleum Corp., 1350 S. Boulder St., Tulsa, Okla. Dresser Engineering Co., Mid-Continent Bldg., Tulsa, Okla., engr. Awarded Dec. 18.

BUILDINGS—LB & CA

O. A. Stocke & Co., 116 S.W. 3rd St., Rochester, Minn., LB **$585,800** (13 bidders), general constr. 2 story, bsmnt. HOSPITAL, OWATONNA, MINN. City, City Hall, Owatonna, Minn. Bids Jan. 7. CD 12/4.

James Thompson & Sons, 222 E. 3 St., Ames, Iowa, CA Est. **$800,000,** 2 story, bsmnt., 84x173 ft., 56,000 sq. ft. OFFICE BLDG., CENTERVILLE, IOWA. Iowa Southern Utilities Co., H. L. Mann, pres., Centerville, Iowa. Bids Oct. 17 rejected. CD 11/12, under LB.

The L. E. Myers Co., 53 W. Jackson Blvd., Chicago 4, Ill., CA Est. **$750,000,** 250,000 sq. ft. 138/34.5 KV bulk SUB-STATION, incl. steel structures, circuit breakers, transformers, towers and control houses, Lindbergh-Warson Industrial Dist., ST. LOUIS COUNTY, MO. Union Electric Co., 315 N. 12th Blvd., St. Louis 1, Mo.

▲ **Motel Investors Inc.,** c/o Mobley & Safely, archts. & Assocs., archts., 915 N. Broadway, Wichita, Kan., rejected bids Dec. 19, 84 unit MOTEL, west of Kansas Turnpike Interchange, WICHITA, KAN. **$1,000,000.** CD 12/3.

Vaucon Co., c/o Emil A. Fretz Jr., archt., 5526 Dyer St., Room 232-233, Dallas, Tex. CA **$575,000.** 3 story MEDICAL bldg. 3504 Swiss St., DALLAS, TEX. R&H Realty Corp., 2010 S. Industrial Blvd., Dallas, Tex.

Henry C. Coit, Belt Line Rd., Dallas, Tex. Owner Builds. **$728,000.** 63 DWELLINGS, west of Richardson Heights No. 9, RICHARDSON, TEX.

FAR WEST

HEAVY CONSTRUCTION—BA

California—PARK IMPRVS.—BA 2/4—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 10 buildings, picnic units, lifeguard stands, utilities, Strand State Park. near Coronado, San Diego Co. $407,550. Plans deposit $50. CD 12/4.

▲† **Calif., Lompoc**—G-M VEHICLE ASSEMBLY BLDG.—BA 2/4—U. S. Eng., 751 S. Figueroa St., Los Angeles, G-M vehicle assembly bldg. (Proj. Sentry) Vandenberg Air Force Base, ENG-04-353-59-36. $2,000,000.

Calif., Patton—BA 2/4—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 2 steel tank reservoirs, cooling tower, pump house, pumps, concrete work automatic electrical controls, excavating, grading, etc., Patton State Hospital. $431,250. Plans deposit $25. CD 12/4.

▲† **Wash., Spokane**—AIR BASE BLDGS—BA 2/4—U. S. Property & Fiscal Officer, 5114 Steilacoom Blvd. S.W., Tacoma, four 23,930 sq. ft. steel frame and rein-conc. bldgs., Air National Guard Facilities at Geiger Field, Inv. 59-4, $1,500,000, Plans deposit $50, CD 10/30.

BUILDINGS—BA

▲ **Ore., Portland**—NURSES HOME—BA 2/2—Emanuel Hospital, 2801 N. Gantenbein St., two, 3 story, 49 x 69 ft. Nurses Home wings. Plans deposit $50. Church, Newberry, Roehr & Schuette, Builders Exchange Bldg., archts. CD 2/27.

▲ **Calif., La Mirada**—SCHOOL—BA 2/6—Excelsior High School Dist., 17923 S. Pioneer Blvd., Artesia, La Mirada High School. $2,000,000. Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, archts. CD 8/1.

HEAVY CONSTRUCTION—LB & CA

† **U. S. Eng.,** 1209 8th St., Sacramento, Calif. cancelled bids to have been opened Feb. 3, constr. 2 story concrete block masonry officers quarters, with bsmnt., utilities, sewage, Stead Air Force Base, Spec. 2448, ENG-04-167-59-34, RENO, NEV. Est. **$800,000.** Will re-advertise. CD 12/31.

† **Carl N. Swenson Co., Inc.,** P.O. Box 558, San Jose, Calif., LB **$480,000** (9 bidders) 2 story, rein.-con. office bldg. and boiler plant for 3.5 hypersonic wind tunnel, MOFFETT FIELD, CALIF. National Aeronautics & Space Admin., Ames Research Center, Moffett Field, Calif. Bids Jan. 6. CD 12/17.

▲ **Vido Artukovich,** 11155 Rush St., El Monte, Calif., LB **$2,344,558** (12 bidders) constr. New Hope-Placentia Trunk sewer, Contr. 2-1, SANTA ANA, CALIF. Orange County Sanitation Dist. No. 2, 1104 W. 8th St., Santa Ana, Calif. Bids Jan. 7. CD 12/23.

BUILDINGS—LB & CA

Burch Constr. Co., 5126 Vineland Ave., North Hollywood, Calif. LB **$481,304.** (7 bidders) William F. Elliott Elementary SCHOOL, ARTESIA, CALIF. Artesia School Dist., 11865 E. 178 St., Artesia, Calif. CD 12/3, under LB.

T. G. Robinson, 1701 Gisler St., Costa Mesa, Calif. CA **$562,035.** 37 stucco DWELLINGS, Corsica Rd., Moloki St., COSTA MESA, CALIF. Mesa Verde Estates, 1701 Gisler St., Costa Mesa, Calif.

Glenn R. Nielsen Co., 16143 Camino del Sol, Los Gatos, Calif. CA **$425,000.** 25,000 sq. ft. wood, stucco structural steel frame CHURCH, DALY CITY, CALIF. Church of Jesus Christ of Latter Day Saints, c/o Dean Price & Assocs., archts., 510 S. Mathilda, Sunnyvale, Calif.

Edwards Constr. Co., Box 980, Pomona, Calif. LB **$461,523** (6 bidders) Valley View SCHOOL, DUARTE, CALIF. Duarte School Dist., 1427 Buena Vista St., Duarte, Calif. Bids Jan. 6. CD 12/18.

▲ **Kemp Bros. & George K. Thompson,** 8750 Mettler St., Los Angeles, Calif. CA **$2,156,000,** Sunny Hills HIGH SCHOOL, FULLERTON, CALIF. Fullerton Union High School Dist., 201 E. Chapman Ave., Fullerton, Calif. Bids Dec. 10. CD 12/15, under LB.

Wenhe Constr. Co., 5130 July St., San Diego, Calif. Owner builds. **$615,060.** 50 DWELLINGS 16th St., 17th St., Thalia St., IMPERIAL BEACH, CALIF.

E. Merlo & Son, 408 E. Geary St., Stockton, Calif. CA **$500,000.** 24 lane BOWLING ALLEY, parking area, Cherokee Lane, LODI, CALIF. Hank Healy & Robert Peters, 117 S. Sacramento St., Lodi, Calif.

▲ **D&E Corp.,** 8906 W. Olympic Blvd., Beverly Hills, Calif. Owner builds. **$1,138,350.** 86 stucco DWELLINGS Tr. 21874. MONTEREY PARK, CALIF.

▲ **Butler-Harbour Constr. Co.,** 9741 Lincoln Ave., Anaheim, Calif. Owner Builds. **$1,500,000.** 83 DWELLINGS, Libby St., Hilldale St., Carey Rd., OCEANSIDE, CALIF.

▲ **North State Builders, Ltd.,** 475 El Camino Real, Menlo Park, Calif. CA **$1,221,000.** APARTMENT, 115 Alma St., PALO ALTO, CALIF. W. R. McIlvaine & R. K. Jacobsen, 475 El Camino Real, Menlo Park, Calif.

F. R. & W. E. Jones, 3591 Myers St., Arlington, Calif. LB **$443,900,** est. $150,000 (9 bidders) CORPORATION YARD at Riverside Campus, RIVERSIDE, CALIF. Bd. Regents, University of California at Riverside, Riverside, Calif. Bids Jan. 6. CD 12/16.

Ole Hauge, 2718 W. Main St., Alhambra, Calif. LB **$499,900.** (7 bidders) phase 2. frame, stucco Tustin High SCHOOL addns., TUSTIN, CALIF. Tustin Union High School Dist., 1171 SE Hy. 101, Tustin, Calif. Bids Dec. 29. CD 12/29.

Sherman H. Johnson, 10329 Weaver St., El Monte, Calif. LB **$735,700.** est. $800,000. (8 bidders) Starbuck Intermediate SCHOOL, WHITTIER, CALIF. Lowell Joint School Dist., 2250 W. Whittier Blvd., Whittier, Calif. Bids Jan. 6. CD 12/18.

CANADA

BUILDINGS—BA

Ont., Ottawa—SHOPPING PLAZA—BA 1/28—Foster Business Services Ltd., 63 Sparks St., 1 story, 80 x 500 ft., steel, concrete shopping plaza, Eastview. $850,000. J. Morris Woofson, 104 Lewis St., archt. CD 7/25.

Ont., Toronto—COLLEGIATE—BA 2/6—York Twp. Bd. Educ., 2 Tretheway Dr., structural steel, brick, concrete block collegiate alterations, and addns., Vaughan Rd. $500,000. Plans deposit $50. J. Brenzel, 658 Spadina Ave., archt. Alex Tobias & Assocs. Ltd., 194 Wilson Ave., engrs. CD 7/21.

Que., Fabreville—HOUSING—Bids Asked—Leefort Realty Ltd., 2360 Lucerne Rd., Montreal, 50 one story, bsmnt., brick bungalows and split levels housing program. $750,000. Patsy Colangelo, 8259 St. Lawrence Blvd., Montreal, archt.

HEAVY CONSTRUCTION—LB & CA

Burns & Dutton Concrete & Constr. Co. Ltd., 5720 4 St. SW, Calgary, Alta., CA **$736,871,** installing 55,000 ft. sewer line, 50,000 ft. water main, MONTGOMERY, ALTA. Town of Montgomery, Town Hall, Montgomery, Alta. Strong, Lamb & Nelson Ltd., 504 4 St. E., Calgary, Alta., engrs. Awarded Dec. 30.

▲ **McNamara (Quebec) Ltd.,** 3901 Namur St., Montreal, Que., LB **$1,772,000** (22 bidders) pier, Sections 54 to 56, Montreal Harbor, MONTREAL, QUE. National Harbours Bd., West Block, Parliament Bldgs., Ottawa, Ont. Bids Dec. 18. CD 11/13.

BUILDINGS—LB & CA

Rolmac Constr. Co. Ltd., 134 Cannon St. E., Hamilton, Ont., LB **$605,440** (17 bidders) 80 semi-detached HOUSING UNITS, walks, driveways, service laterals HAMILTON, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, Ont. Bids Jan. 6. CD 12/18.

▲ **M. Sullivan & Son Ltd.,** 234 Elgin St., Armprior, Ont., CA **$1,397,731** (12 bidders) HOSPITAL ADDNS., LINDSAY, ONT. Bd. of Governors Ross Memorial Hospital, Lindsay, Ont. C. D. Carruthers & Wallace Consultants Ltd., 92 Yorkville Ave., engr. Bids Nov. 18. Awarded Jan. 5. CD 10/28.

▲ **Angus Robertson Ltd.,** 57 Bloor St. W., Toronto, Ont., CA est. **$1,250,000,** 12 story, bsmnt., brick, block, 155 suite APARTMENT, TORONTO, ONT. Hubert Buildings Ltd., 484 Church St., Toronto, Ont. Peter Caspari, 102 Eglinton Ave. E., Toronto, Ont., archt. S. S. Vozoris, 4195 Dundas St. W., Toronto, Ont., engr. Awarded Jan. 2.

▲ **Colony Development Corp.,** 282 Ontario St. W., Rm. 306, Montreal, Que. Owner Builds. **$1,000,000,** 7 story, 83 x 220 ft., brick, rein.-con. APARTMENT, Walkey Ave., MONTREAL, QUE.

▲ **A. C. Morin,** Cap de la Madeleine, Que., CA est. **$7,000,000,** low cost HOUSING PROJECT near St. Malo Industrial Centre No. 5 QUEBEC CITY, QUE. Les Patios Inc., 86 Cote de La Montagne, Quebec City, Que. CD 8/20.

▲ **Hill-Clark-Francis Ltd.,** 4781 Van Horne Ave., Montreal, Que., CA **$6,500,000,** TOWNSITE DEVELOPMENT Northern Quebec mining area, Lac Barbel, SHELTER BAY, QUE. Quebec Cartier Mining Co., 1225 Laird Bldg., Mount Royal, Que. Fiset & Deschamps, 20 St. Jean St., Quebec City, Que., archts. Beauchemin, Beaton & Lapointe, 6655 Cote des Neiges Rd., engrs.;
Canit Construction Ltd., 360 Place Royals, Montreal, Que. and **A. Janin Co. Ltd.,** 1460 Sherbrooke St. W., Montreal, Que., CA **$1,000,000** (8 bidders) HARBOR DEVELOPMENT for dock piling, part of large mining development (Shelter Bay, Que.) Bids Dec. 1. CD 11/17.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **A. D. Scott Ltd.,** Kingston, Jamaica, CA **$1,400,000,** TERMINAL bldg. at Palisadoes Airport, KINGSTON, JAMAICA, B. W. I., Government of Jamaica, Kingston, Jamaica.

PROPOSED PROJECTS

WATER SUPPLY

▲ **O., Cincinnati**—City, City Hall, 30-in. water main extens., Reading Rd. **$2,500,000.**

▲ **Wash., Spokane**—City, City Hall, 30-in. transmission main from Brown's Mountain reservoir to Moran Prairie area. **$1,100,000.**

▲ **Que., Rosemere**—Town of Rosemere, Town Hall, filtration plant, storage tank, feeder mains, distrib. mains, etc. **$3,508,000.**

SEWERS, WASTE DISPOSAL

▲ **Conn., West Haven**—Town, Town Hall, incinerator, **$1,200,000;** storm water drains various highways, **$1,500,000;** extension Blohm St. sewage treatment plant and cover open Ditch from plant to Beach St., **$400,000.**

▲ **Fla., Dania**—City, City Hall, sewage disposal plant and lines, **$2,225,000.**

▲ **Mich., Devils Lake**—Sanitary Dist., Devils and Round Lakes Area, sewerage sys., disposal plant, Ben Creek, west of Manitou Beach. **$1,800,000.** Angelo Marino, 2 E. First St., Monroe, engr. CD 9/18/56, under Mich., Rollin.

▲ **Neb., Omaha**—City, City Hall, Saddle Creek sewer between Center St. and Cumings St. **$2,000,000.** B. H. Backlund & Assoc., 4924 Poppleton St., consult. engrs. Bids Oct. Y St. relief sewer between 26th St. and 30th St. **$400,000.** Leo A. Daly Co., 633 Insurance Bldg., consult. engr. Bids June. CD 11/10.

▲ **N. H., Nashua**—Bd. P. Wks., 229 Main St., Stage 1, Salmon Brook and South Merrimack River Intercepting Sewers, treatment plant. **$1,349,000.** CD 1/10.

▲ **O., Cincinnati**—City, City Hall (two sections) Mill-creek auxiliary sewer. **$3,500,000.**

▲ **Wash., Seattle**—Lake City Sewer Dist., 12721 30 Ave. N.E., Seattle, Zone 55, sewers in Utility Local Imprvt. Dist. No. 16, between 145 and 190 Sts., Aurora Ave. to 6 Ave. N.E., **$2,500,000.** Scheduled for constr. next year. Hill & Ingman, 3104 Western Ave., Zone 1, consult. engrs. CD 11/29/57.

▲ **Que., Rosemere**—Town of Rosemere, Town Hall, sewage disposal plant, pumping stations, trunk sewers, lateral sewers and collectors. **$2,871,000.**

BRIDGES

▲ **Ill., Chicago**—Bd. Comrs. Cook Co., County Bldgs., interchange constr. Calumet-Kinery Expressway 1,300 ft. north to 1,200 ft. south of 159 St., **$410,000,** Calumet City;
grade separations, ramp structures for airport leads at Northwest Expressway and O'Hare Field, **$1,090,000,** Park Ridge;
ramp structures, grade separations, Northwest Expressway over Toll Rd. Ramp J (Toll Rd.) over Northwest Ex-

(Continued on page 100)

TIDEWATER OIL COMPANY HOME OFFICE
4201 Wilshire Blvd., Los Angeles, California

Owner: Tide Water Realty Company
Architect: Claud Beelman and Associates
Engineer: Brandow and Johnston
Contractor: C. L. Peck Construction and Realty Company
Laboratory: R. G. Osborne Laboratories, Inc.
Concrete: San Gabriel Ready-Mix of Inglewood
Structure: Multi-story, conventional, lightweight concrete

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MARACON® promotes more complete hydration of cement particles and permits a substantial reduction in the unit water content without loss of plasticity or consistency of the mix. Low water content means higher strength.

A. Minimize shrinkage in concrete before and after hardening, due to lower water content and more complete hydration of cement.
B. Decrease permeability.
C. Achieve greater density and higher durability factors.

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A. Maintain slump and workability at low W/C ratios.
B. Attain higher strengths without increasing cement content of a mix.
C. Permit economical redesign of conventional concrete mixes.

MARACON also reduces water requirements in concrete mixes containing pozzolanic materials.

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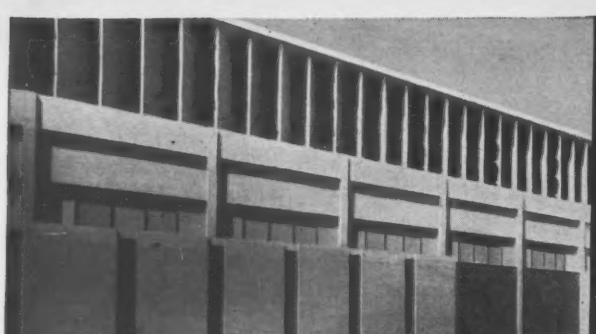

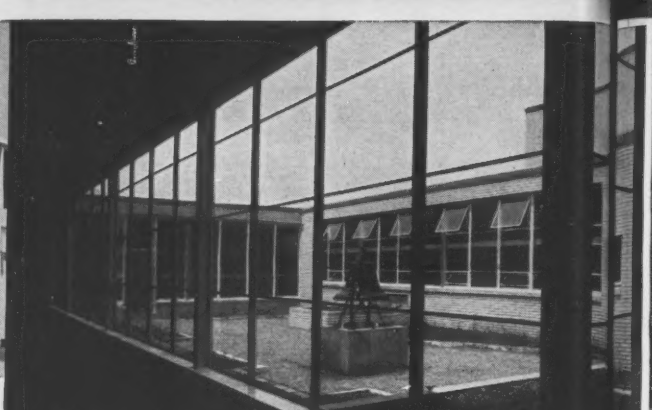

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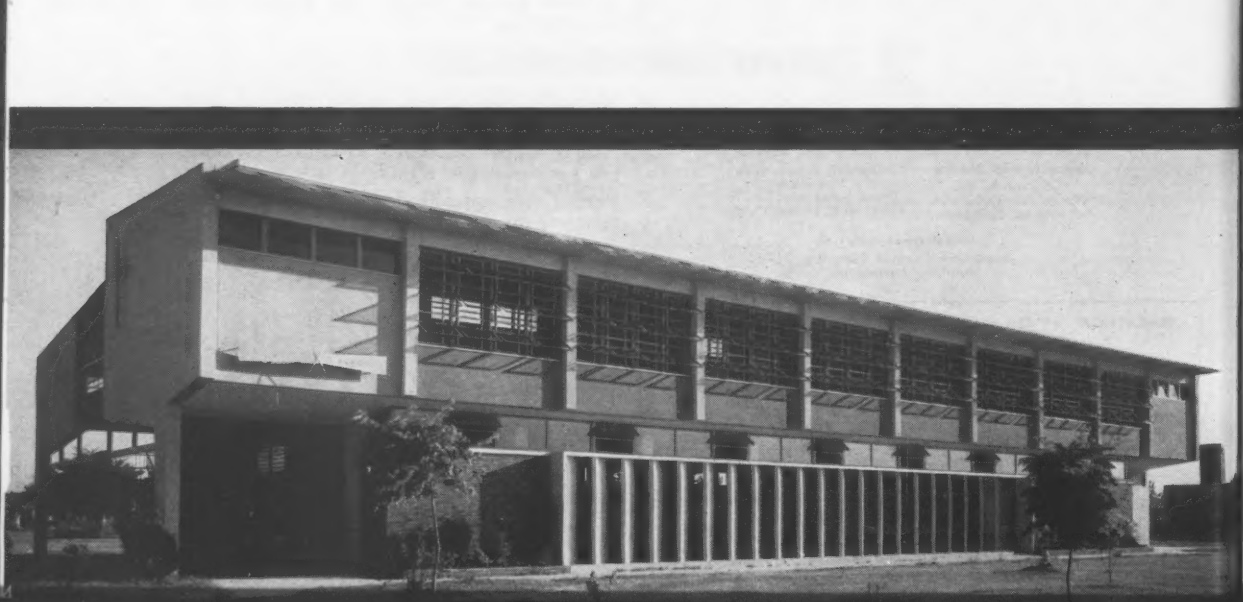

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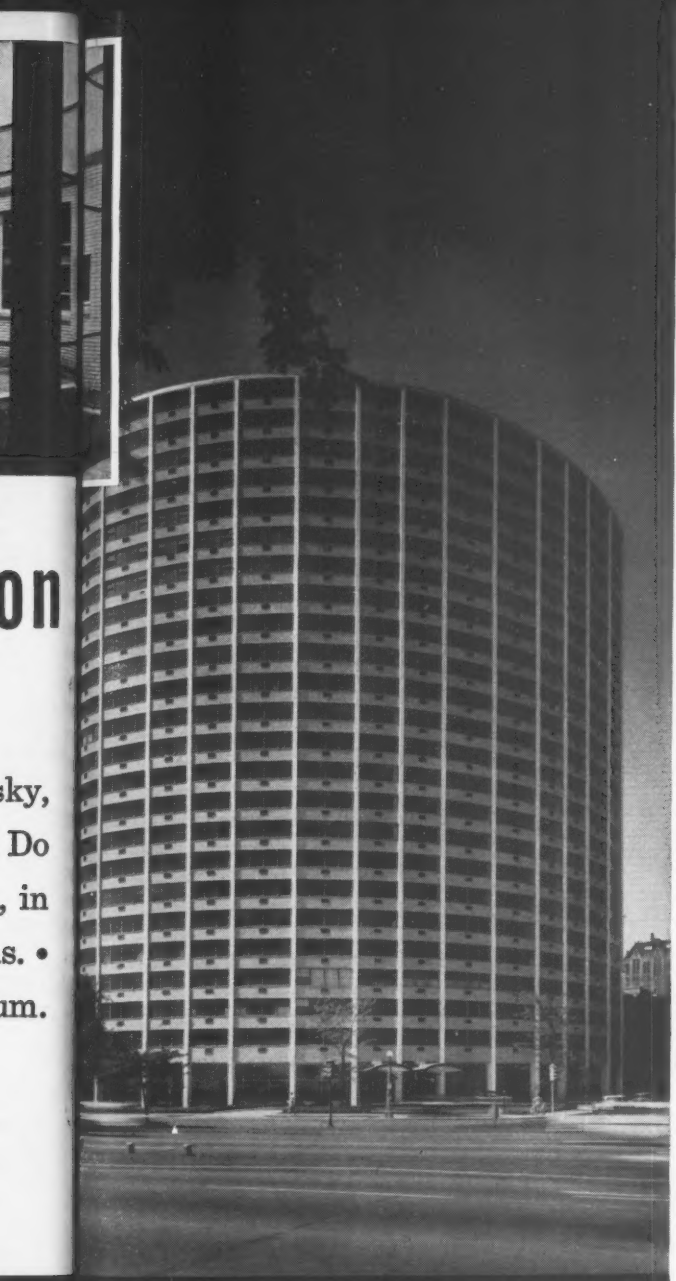
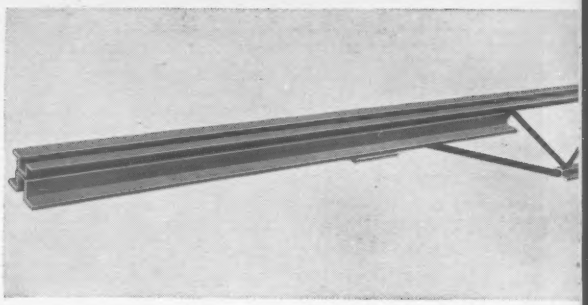


1. Truscon Intermediate Projected and Donovan Steel Windows.
   St. Catherine of Sienna Church, New Orleans, La.
   Burk, Le Breton, and Lamantia, architects.
   Lionel F. Favret, Inc., contractor.

2. Truscon Commercial Projected, Architectural Projected, and Donovan Steel Windows.
   Jefferson-Morgan Junior-Senior High School, Jefferson, Pa.
   Celli and Flynn, architects.
   Graziano Construction Co., contractor.

3. Truscon Series 138 Steel Double-Hung Windows and Screens.
   1150 Lake Shore Drive Apartment, Chicago, Ill.
   Hausner and Macsai, architects.
   Crane Construction Company, contractor.

4. Truscon Donovan Steel Windows.
   Blessed Pius X Church and School Building, New Orleans, La.
   William R. Burk Associates, architects and engineers.
   Perrilliat-Rickey Construction Co., contractors.



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City_____ Zone____ State_____

(Continued from page 96)

pressway precast, prestressed girders, $522,000, Park Ridge. Bids in 1959.

▲ **Ill., Chicago**—Dpt. of Purchases, City of Chicago, City Hall, Zone 2, 4 lane 300 ft. span fixed bridge Little Calumet River, 134 St. $2,000,000. Steve Michuda, 320 N. Clark St., chief bridge engr. CD 6/10/57.

▲ MISSISSIPPI—State Hy. Dpt., State Office Bldg., Jackson

Harrison and Jackson Counties—7,800 ft. bridge across Biloxi Bay, U.S. Hy. 90 between Biloxi and Ocean Springs. $6,000,000-$7,000,000.

STREETS AND ROADS

▲ **Conn., West Haven**—Town, Town Hall bit. concrete resurfacing various highways, $1,000,000.

▲ **Fla., Miami Beach**—City, City Hall, paving Collins Ave. between Eden Rock and Royal York Hotels. $1,000,000. CD 10/14.

AIRPORTS

▲ **Colo., Golden** — AIRFIELD — Industries for Jefferson County, Inc., airfield, 7,000 ft. northwest-southeast runway, 1 mile southwest Broomfield, $1,000,000. Ken R. White, 1567 Marion, Denver, consult. engr.

▲† **N. C., Calypso**—SAGE—U. S. Eng., 308 Customhouse, Wilmington, 3 story, 100,000 sq. ft. bldg. for SAGE for Air Force, $5,000,000. Bids in March.

LATIN AMERICA

▲ **COSTA RICA**—Bureau P. Rds., Dpt. Commerce, Inter-American Hy. Div., 18 and F Sts. N. W., Wash. 25, D. C., completing Inter-American Hy. from Texas border to Panama Border, incl. 39 steel and concrete bridges. $15,000,000. CD 6/27/57.

PUBLIC BUILDINGS

▲† **Alaska, Anchorage**—HOSPITAL—U. S. P. Health Service, 330 Independent Ave., S. W. Wash., D. C., plans by Stone, Mulloy, Marraccini & Patterson, 536 Mission St., San Francisco, Calif., mental hospital, $6,500,000. Bids in 1959. CD 2/17.

▲ **Calif., Los Altos**—JUNIOR COLLEGE—Foothill Jr. College Dist., 176 2nd St., plans by Ernest J. Kump & Masten & Hurd, Associated archts., 526 Powell St., San Francisco, 400,000 sq. ft. Foothill Junior College. $10,000,000. CD 5/27.

▲ **Colo., Boulder**—DORMITORY—University of Colorado, Campus, plans by Baume & Polivnick, Robert Berne & William C. Muchow, 1225 Bannock, Denver, dormitory and dining facilities, $3,200,000. CD 2/21/56.

▲ **Me., Augusta**—ACUTE ADMISSION, etc.—State, Dpt. Institutional Services, State House, plans by Bunker & Savage, 86 Court St., acute admission and treatment bldg. State Hospital. $1,800,000. Maine Engineering Service Co., 133 Court St., mechanical engr. Constr. 1959. CD 3/26.

▲ **Md., Baltimore**—SCHOOLS—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, plans by Sandlass & Craycroft, 2513 N. Charles St., Baltimore 18, Md., 1 & 2 story, brick, concrete, steel, block Sinclair Lane junior high school. $3,000,000. CD 8/2/57. Plans by Ben Brotman, 2118 Maryland Ave., Baltimore 18, Md., 2 story, brick, concrete steel, block, slag roofing School 159 addn., Cherryland and Bridgewater Rds. $460,000. CD 11/11.

▲ **Md., Towson**—SCHOOL—Baltimore County Bd. Educ., Aigburth Rd., Zone 4, plans by Jamison & Marcks, 8 E. Mulberry St., Baltimore 2, Md., 1 story, brick, concrete, steel, block Grange elementary school, Merritt Blvd. $1,230,000. Egli & Gompf, 1003 N. Calvert St., Baltimore 2, Md., mechanical engrs. J. L. Faisant & Assoc., 2455 Maryland Ave., Baltimore 18, Md., structural engrs.

▲ **Mass., Amherst**—CLASSROOM and LABORATORY BLDG.—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by Morris W. Maloney, 220 Dwight St., Springfield, Mass., Classroom and Laboratory Bldg. (4th Section Science Center), University of Massachusetts. $2,000,000. Constr. 1959.

▲ **Mass., Barre**—SCHOOL—Towns Barre and Hubbardston, Barre, Regional Junior-Senior High School. $1,000,000.

▲ **Mass., Danvers** — VOCATIONAL, etc. — Comrs. Essex Co., 32 Federal St., Salem, plans by Michael T. Lipinski, 75 Summer St., Lynn, vocational bldg. and technical school for Essex Co. Agricultural School. $1,200,000. CD 4/18.

▲† **N. H., Portsmouth**—HOUSING—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., plans by Anderson, Nichols & Co., 150 Causeway St., Boston, Mass. and Samuel Glaser Assoc., 234 Clarendon St., Boston, Mass., archts.-consult. engrs., 48-unit family housing proj., Pease Air Force Base. $7,000,000. Constr. 1959. CD 9/29.

▲ **N. J., Caldwell**—SCHOOL—West Essex Regional High School Bd., voted bonds Dec. 16, regional high school. $4,785,600. CD 12/16.

▲ **N. J., Somers Point**—SCHOOL—Mainland Regional High School Bd., bond election Feb. 3, regional high school. $1,500,000. CD 5/29.

▲ **N. Y., Mayville**—COUNTY HOME—Bd. Supervs. Chautauqua Co., Court House, County Home. $1,800,000.

▲ **N. Y., Plattsburgh**—HEALTH and PHYSICAL BLDG.—Dpt. P. Wks., State Office Bldg., Albany, plans by Fordyce & Hamby, 70 W. 40th St., New York 18, N. Y., Health and Physical Education Bldg., State University Teachers College. $2,600,000. CD 3/26/57.

▲ **O., Batavia**—HOSPITAL—Clermont County, Bd. Comrs., Batavia, plans by Vogt, Ivers, Seaman & Assocs., hospital. $2,000,000. CD 11/11/57.

▲ **Tex., Hurst-Euless** — SCHOOLS — Hurst-Euless Ind. School Dist., Hurst, voted bonds Dec. 13, Junior High School, $1,000,000; Elementary School No. 1, $425,000; Elementary School No. 2, $575,000.

▲ **Utah, Ogden**—SCHOOL—Bd. Educ., 2351 Grant Ave., bond election Feb. 17, school constr. $3,050,000. CD 5/2/56.

▲† **Utah, Salt Lake City**—FEDERAL OFFICE—General Services Admin., Denver Federal Center, Denver, Colo., federal office, North Temple and Main Sts. $10,000,000. CD 10/3/56.

▲ **Ont., Toronto**—COLLEGIATE—Etobicoke Bd. Educ., 4969 Dundas St. W., Highbury Collegiate Institute, $1,013,200; Highbury senior public school, $500,650; Bloordale senior public school, $500,650; Beaumonde Heights School, $444,600.

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham** — SHOPPING CENTER — N. W. Walters, Sr., 3839 Canawa Rd., plans by W. Thorsen, 124 South 4 St., Minneapolis, Minn., shopping center at site 34 stores. Constr. March 1959. $2,700,000.

▲ **Colo., Denver**—HOSPITAL—National Jewish Hospital E. Colfax and Colorado Bldg., plans by Eugene D. Sternberg & Assocs., 1930 Sherman, B'Nai B'Rith Hospital modernization, Colorado Blvd. and Colfax. $1,000,000.

▲ **Colo., Denver**—SHOPPING CENTER—Sheridan Plaza Shopping Center, c/o A. H. Weiss, Colorado National Bank, plans by Paul W. Rader, 6915 Lakewood Place, Lakewood, 1 story, 216,620 sq. ft. brick, steel and glass shopping center, South Sheridan and West Jewell Aves., $3,000,000. CD 9/23.

▲ **Colo., Pueblo**—HOSPITAL—Parkview Episcopal Hospital, plans by Fisher, Fisher & Davis, Denver National Bank Bldg., hospital expansion. $1,250,000.

▲ **Conn., Manchester**—SCHOOL—Archdiocese of Hartford, Chancery Office, 140 Farmington Ave., Hartford, plans by Willard Wilkins, 945 Asylum Ave., Hartford, high school, Hilliard St. $1,000,000. CD 8/8.

▲ **Conn., West Hartford**—SCHOOL—Archdiocese of Hartford, Chancery Office, 140 Farmington Ave., plans by Russell & Gibson & Assocs., 1009 Farmington Ave., Catholic High School No. Main St. and Wampanoag Dr. $1,000,000. CD 8/8.

▲ **Ill., Chester**—HOSPITAL—Owner, c/o Hanner-Bartels & Assocs., archts., 21 E. Aston St., Wood River, hospital, $1,000,000.

▲ **Ill., Hinsdale**—APARTMENTS—Owner c/o Charles E. Cessna, 231 S. La Salle St., Chicago, plans by Philip Duke West, 33 E. 1st St., 52 cooperative Hinsdale Countryside apartments, S. County line Rd. and 57 St. $2,150,000.

▲ **Ind., Beech Grove**—HOME—St. Paul's Hermitage, c/o Catholic Diocese of Indianapolis, 128 W. Georgia St., Indianapolis, plans by Charles M. Brown, 320 N. Meridian St., Indianapolis, home for aged, $1,000,000. CD 12/10/56.

▲ **Kan., Overland Park**—HOSPITAL—Shawnee-Mission Hosp., Pleasantview Health Assoc., c/o Seventh Day Adventists, 2928 Campbell, Kansas City, Mo., plans by Hall Stonebraker, 6523 W. 77th Terr., Overland Park, Kan., 50-bed hospital. $1,100,000. CD 5/12.

▲ **Mass., Boston**—MEDICAL RESEARCH—Retina Foundation, 30 Chambers St., Boston, plans by Hans Peten-Klein, 34 Fletcher Rd., Bedford, Medical Research Bldg., vicinity of Mass. General Hospital. $1,000,000. Constr. 1959.

▲ **Mass., Roxbury**—APARTMENTS—World Trade Center in New England, Inc., 470 Atlantic Ave., Boston, apartments, Whitney St. $3,500,000. Constr. 1960.

▲ **Mass., Roxbury**—APARTMENTS—World Trade Center in New England, Inc., 470 Atlantic Ave., Boston, plans by Hugh Stubbins & Assoc., 806 Mass. Ave., Cambridge, Mass., apartment, Parker Hill Section, off Whitney St. $2,500,000. Constr. 1960.

▲ **Minn., Brooklyn Center**—SHOPPING CENTER—Northtown Plaza, Inc., Midland Bank Bldg., Minneapolis, plans by W. Thorsen, 124 South Fourth St., Minneapolis, Minn., shopping center incl. 40 stores, Osseo Rd. and 69th Ave. $3,000,000. Constr. 1959.

▲ **Minn., Golden Valley (P. O. Minneapolis)**—SHOPPING CENTER, etc.—M & W Realty, 6028 Forty-second Ave. North, Minneapolis (Robbinsdale), plans by W. Thorsen, 124 South Fourth St., Minneapolis, Minn., 45,000 sq. ft. shopping center and 270 unit apartment development, Hy. 100 and St. Croix Ave. $5,000,000.

▲ **Minn., Wayzata**—HOSPITAL—Memorial Hospital of Minnetonka, hospital. $2,000,000.

▲ **Mo., Hazelwood**—RESIDENCES—Contemporary Homes, Inc., 9220 Lackland Rd., Overland 14, Mo., 320 residences. $1,600,000.

▲ **N. H., Nashua**—MOTEL, etc.—Green Ridge Turkey Farm, Daniel Webster Hy., plans by Thomas Byrd Epps Inc., 73 Newbury St., Boston, Mass., Green Ridge Motel addn., swimming pool. $1,550,000.

▲ **N. Y., Brooklyn**—APARTMENT—David Wolfenson, c/o S. J. Kessler & Sons, archts., 551 Fifth Ave., New York 17, N. Y., two 16 story apartments, incl. 500 units, Flatbush Ave. and Lincoln Road. $4,000,000.

▲ **N. Y., New York**—APARTMENT—Mario J. Cusati, 391 E. 149th St., New York, Zone 55, plans by Joseph & Vladeck, 1841 Broadway, New York 23, 13 story apartment, Wilkinson Ave. between Mulford and Appleton Aves., Bronx Boro. $2,000,000.

▲ **N. Y., Salamanca**—HOSPITAL—Salamanca Hospital Dist. Auth., plans by Anthony Betz, Salamanca, N. Y., 85-bed hospital. $1,500,000.

▲ **O., Maple Heights**—MEDICAL BLDG., etc.—Southgate Shopping Center, Libby & Northfield Rds., plans by Sidney H. Morris & Assocs., 134 S. LaSalle St., Chicago 2, Ill. Southgate Shopping Center, 3 story Medical Bldg. $1,250,000; 48-lane bowling alley, $1,000,000; 3 story Office Bldg., $750,000.

▲ **Okla., Oklahoma City**—BANK—Federal Reserve Bank, 226 NW 3 St., plans by Sorey, Hill and Sorey, 809 N.W. 36 St., 3 story masonry bank addn. $2,000,000.

▲ **Pa., Harrisburg**—OFFICE—Penn. State Educ. Assn., 400 N. 3rd St., plans by Lawrie & Greene, 321 N. Front St., 6 story, 90x75 ft. limestone front office, 400-406 N. 3rd St. $1,200,000. Bids June 1959.

▲ **Pa., Horsham**—SHOPPING CENTER—Shop-A-Rama c/o Tose Inc., Bridgeport, shopping center, Easton Rd. $1,500,000.

▲ **Pa., Jamison**—RESIDENTIAL DEVELOPMENT—William E. Worthington, Hartsville, residential development, Meeting House Rd., etc. $4,000,000. Constr. 1959.

▲ **Pa., Phila.**—CLASSROOM—St. Joseph's College, 54th St. and City Line, plans by Harkins & Alvare, Flourtown, classroom bldg. $1,000,000. Julius Dorfman, 1411 Walnut St., consult. engr.

▲ **Pa., Warminster** — SHOPPING CENTER — Allen G. Weaver & Assocs., Inc., c/o Florence Starbuck, 18 W. Chelten Ave., Phila., shopping center, York Rd. $1,000,000.

▲ **Pa., Wydmoor** — RESIDENTIAL DEVELOPMENT — Owner c/o Paul Ajermish, 20 S. 15th St., Phila., residential development, Stenton Ave., Pine Rd., etc. $3,000,000.

▲ **R. I., Wakefield**—HOSPITAL—South County Hospital, 95 Kenyon Ave., plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, Mass., hospital wing. $1,150,000. CD 7/18.

▲ **Tenn., Brainerd**—SHOPPING CENTER—Dobbs & Co., c/o Heery & Heery, archt., 1722 Peachtree N.W., Atlanta, Ga., 175,000 sq. ft. shopping center and parking lot. $1,900,000.

▲ **Tex., Beaumont**—OFFICE, etc.—Raymond D. Nasher, Republic Bank Bldg. and Centex Constr. Co., 4606 Greenville Ave., Dallas, 12, 15 or 20 story office, $2,000,000-$4,000,000; parking garage, $275,000.

▲ **Tex., San Antonio** — DWELLINGS — Lackland City Homes, Pat Legan, 103 Springvale St., Zone 21, plans by Reginald Roberts Assocs., 2600 N. McCullough Ave., 104 dwellings, exten. Lackland City Subdivision off Loop 13 and Hy. 90. $1,150,000. W. F. Castella & Assocs., 1039 W. Hildebrand Ave., consult. engrs.

▲ **Wash., Edmonds**—HOSPITAL—Stevens Memorial Hospital Assn., 112 3 Ave., Plans by Decker, Christenson & Kitchin, 1411 4 Ave. Bldg., Seattle, Zone 1, hospital, $1,250,000. CD 10/7.

▲ **Wash., Kent**—HOUSES—Duke & Duchess Corp., will not constr. 400 houses Kent-Des Moines Rd., north to S. 216 St., $12,000,000. Project abandoned. CD 2/25.

▲ **Ont., Toronto**—OFFICE—Dominion of Canada General Insurance Co., 26 Adelaide St. W., plans by Marani & Morris, 1250 Bay St., 10 story, 100,000 sq. ft. head office bldg. and 2 story garage, southeast corner University Ave. and Adelaide St. $3,000,000.

▲ **Ont., Toronto**—HOUSING—Leadway Apartments Ltd., 835 Roselawn Ave., Toronto, plans by Uno Prii, 214 Merton St., low-rental housing, Wilson Ave. Highview Ave. and Ridge Rd., $1,433,400. M. A. Konforti, 1173 Bay St., consult. engr.

INDUSTRIAL BUILDINGS

▲ **Ind., East Chicago**—TIN MILL—Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, Zone 1, O., 2nd continuous annealing line for No. 2 tin mill, plant addns. coil cleaning unit and coil storage, Indiana Harbor Works. CD 2/28/57.

▲ **Wash., Seattle**—BRAZING FACILITY—Boeing Airplane Co., 7755 E. Marginal Way, Seattle, Zone 4, 25,000 sq. ft. bldg. for brazing facility, $1,000,000, The Austin Co., 16112 Euclid St., Cleveland, O., consult. engr.

▲ **Ont., Ottawa**—PLANT—Northern Electric Co. Ltd., 1600 Notre Dame St. W., Montreal, Que., plant research bldg. Hy. 17, east of Crystal Beach, $2,000,000.

▲ **Que., Port Alfred**—PAPER MILL—Consolidated Paper Co., subsidiary of Canadian International Paper Co., Sun Life Bldg., Montreal, various bldgs. at paper mill. $1,500,000. CD 9/28/44.

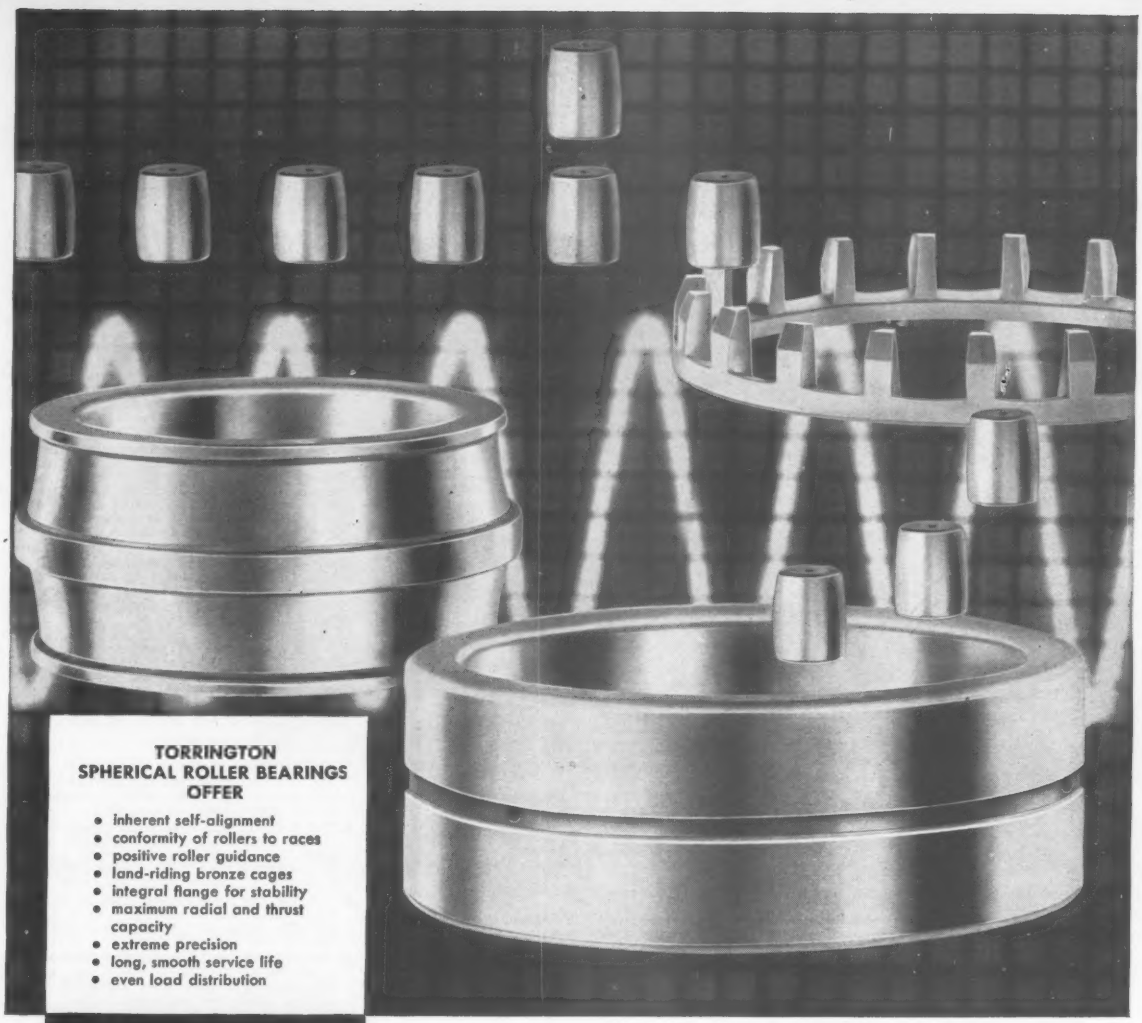
UNCLASSIFIED

▲ **Alabama**—GAS DISTR. SYS.—Marshall County Gas Dist., Scottsboro, natural gas distr. sys., $1,800,000 J. W. Goodwin Engr. Co., 2111 7 Ave., S. Birmingham, consult. engr. CD 12/1.

▲ **Tennessee**—GAS MAINS—East Tennessee Natural Gas Co., Kingston Pike, Knoxville, gas mains to Clinton, Lake City and La Follette. $5,000,000. W. J. Hatfield, 136 Bus Ct., Oak Ridge, owners staff engr. CD 6/10/49.

▲ **Wash., Soap Lake**—RECREATION CENTER—City, City Hall, recreation center, with 3 aluminum domes, $1,100,000, work may start in Spring on first unit.

▲ **Wash., Seattle**—MOORAGE FACILITIES, etc.—Port of Seattle, Bell St. Terminal, Seattle, Zone 1, moorage facilities behind Shilshole Bay breakwater, $2,017,554; transit shed at Pier 20, $805,000; widn. apron at Pier 42, $1,078,000; maintenance shop, $388,000; alter and enlarge Spokane St. fish and cold storage plant, $400,000. G. T. Treadwell, ch. engr. CD 3/13/47.



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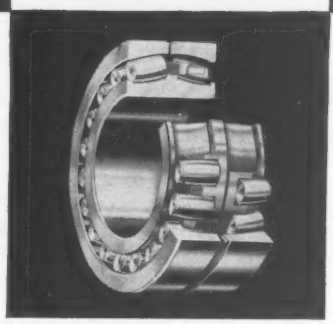

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

January 27 Massachusetts

HEAVY CONSTRUCTION—LB & CA

▲ **NEW HAMPSHIRE**—Dpt. P. Wks. & Hys., Concord, Landers & Griffin, Inc., 800 Islington St., Portsmouth, N. H., CA $1,739,901, hot b. conc. 2.566 mi. 3 steel beam bridges, 65,244 and 288 ft. long, Bethlehem, Grafton Co. Bids Dec. 18. CD 12/24, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **Pa., Pittsburgh**—RUNWAY, etc.—BA 2/3—Bd. County Commrs., Allegheny County, Courthouse, Contr. No. 8-J, grading, drainage of East-West Parallel Runway taxiway "W" and "Z", grading, drainage, paving of relocated Moon Clinton Rd.-connecting road and hangar service road. Plans deposit $25; Contr. 8-L, constr. underpass at intersection of taxiway "W" and hangar service road, Plans deposit $5, at Greater Pittsburgh Airport. CD 4/18.

BUILDINGS—BA

▲ **Pa., New Castle**—HOUSING—BA 2/10—New Castle Housing Auth., City Hall, 100 unit housing, Grant St. $1,600,000. W. G. Eckles Co., Lawrence Savings & Trust Bldg., archt.

▲ **N. J., Newark**—SCHOOL—BA 2/16—City, City Hall, Broad St., Garfield School addn. $1,500,000. William E. Lehman, 972 Broad St., archt. CD 3/5.

▲ **N. J., Dayton**—SCHOOL—BA 2/17—Bd. Educ. Twp. South Brunswick, George Rd., high school, Monmouth Jct. $1,500,000. Alexander Merchant Assocs., 1 Elm Row, New Brunswick, archts. CD 9/2/57, under N. J., Deans.

BUILDINGS—SLC

▲ **N. J., Atlantic City**—MOTEL—Roy Anderson, archt., 401 E. Nevada Ave., Pleasantville, soon lets contract 129 unit motel, swimming pool, for Fleetwood Corp., 3000 Pacific Ave., $2,000,000. CD 8/22.

HEAVY CONSTRUCTION—LB & CA

▲† **Great Lakes Dredge & Dock Co.**, 17 Battery Pl., New York, N. Y., CA $1,765,775, dredging and rock removal New York and New Jersey Channels, Section 4-Rock Area 13, NEW YORK and NEW JERSEY. U. S. Eng., 111 E. 16th St., New York 3, N. Y. CD 9/22.

▲ **T. Frederick Jackson, Inc.**, 39-22 30th St., Long Island City, N. Y., CA $1,739,103, Throgs Neck Bridge Contr. No. TN-9, electrical work, suspended structure and approaches, NEW YORK. Triborough Bridge & Tunnel Auth., Admin. Bldg., Randall's Island, New York 35, N. Y. Bids Dec. 16. CD 12/19, under LB.

BUILDINGS—LB & CA

▲ **Lock Haven Hospital Assn.**, Lock Haven, Pa. rejected bids Dec. 10, HOSPITAL, LOCK HAVEN, PA. LB $2,693,000. CD 12/24, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 27 West Virginia — January 28 Virginia
January 29 Florida

STREETS AND ROADS

January 27 West Virginia — January 28 Virginia
January 29 Florida — February 6 Kentucky

BUILDINGS—LB & CA

▲ **Banks & Lee**, Tower Bldg., Wash., D. C. CA $2,865,400 (7 bidders) Base Bid and Alts., constr. Yorktown HIGH SCHOOL, ARLINGTON, VA. Arlington Co. Bd. Educ., 1426 Quincy St., Arlington, Va. Bids Jan. 13. CD 12/15.

▲ **Cooper Constr. Co.**, 1531 Alfred Place, Jacksonville, Fla., CA $1,527,870 CLASSROOM, STUDENT UNION and CAFETERIA BLDG., University of South Florida, TAMPA, FLA. Florida State Bd. Control, Co. Courthouse, Tampa, Fla. Bids Dec. 3. CD 12/22, under LB.

▲ **Rust Engineering Co.**, 2316 4th Ave. N., Birmingham, Ala., CA Est. $10,000,000, TIRE PLANT, NASHVILLE, TENN. Gats Rubber Co., 999 S. Broadway, Denver, Colo. CD 12/3.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 27 Indiana

▲† **Ind., Columbus**—COMMUNICATIONS, etc.—BA 2/11—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., 1 story, 1,800 sq. ft., concrete floor and block walls communications bldg., 27,000 sq. yd. 6 in. concrete and 5,500 sq. yd. 11 in. concrete airfield pavement, water mains and 100,000 gal. water storage tank, Bakalar Air Force Base, ENG-11-032-59-40. $1,500,000. CD 1/9.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,

O.—**Sutton & Stewart, Inc. and Hatcher Bros., Inc.**, 841 National Rd., Bridgeport, O., CA $1,355,579, Type T-71 and structure 5.43 mi. SR 7-(14.03014.39) (17.71-21.12) F-617-(7) Village of Clarington, Proj. 641, Monroe Co.;

O.—**The W. J. Johnson Constr. Co. & Assocs.**, P.O. Box 6668, Bexley Station, Columbus, O., CA $1,644,362, Type T-71 and structure 1.303 mi. SR 4-19.73, U-681(19), City of Dayton, Proj. 642, Montgomery Co. Bids Dec. 9. CD 12/16, under LB.

▲ **Michael Pontarelli, Inc.**, 4248 N. Kilpatrick Ave., Chicago, Ill., CA $1,697,957, Wrightwood Ave. Aux. outlet sewer, CHICAGO, ILL. Dpt. Purchases, City, City Hall, Chicago, Ill. CD 12/8, under LB.

BUILDINGS—LB & CA

▲ **E. I. duPont de Nemours & Co., Inc.**, duPont Bldg., Wilmington 98, Del., Own Forces, Mylar PLANT addn., CIRCLEVILLE, O.

▲ **Advance Homes, Inc.**, Fairborn, O., Own Forces, $3,000,000, 150 HOMES, Belle-Aire Sub-division, WASHINGTON COURT HOUSE, O.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 28 Arkansas — January 30 Minnesota

STREETS AND ROADS

January 28 Arkansas — January 30 Minnesota

BUILDINGS—BA

▲ **Wyo., Cheyenne**—BANK—BA 2/4—American National Bank, 1602 Capitol Ave., 5 story, bsmnt., 100 x 132 ft. bank, 20th and Capitol Sts. $1,500,000. Extended date. Bank Bldg. Corp. of America, 355 Stockton St., San Francisco, Calif., archts. CD 1/8.

HEAVY CONSTRUCTION—LB & CA

▲ **Northern States Power Co.**, 15 S. Fifth St., Minneapolis, Minn., Own Forces

$197,000—rebuild 69,000 volt power line Delano substation to Young America sub-station.

$140,000—sub-station at Excelsior.

$225,000—25 mi., 69,000 volt transmission line connection with Interstate, Mankato.

(1) $3,500,000—misc. addns. to electric distr. sys., Minneapolis.

(2) $500,000—reconstr. parts of distr. sys. in Minneapolis.

$500,000—replacement 115,000 volt circuit breakers at Riverside and Aldrich Sub-Stations, Minneapolis.

$88,000—imprvs. at Glen Lake Sub-Station near Minneapolis.

$100,000—relocation double circuit tower line at France Ave. south, span of five towers, 1.5 mi., Minneapolis.

$1,100,000—imprvs. for Terminal Sub-Station, East Hennepin Ave. near Lauderdale, Minneapolis.

$140,000—imprvs. to and expansion of Twin Lakes Sub-Station, Minneapolis.

$88,000—rebuild 34,500 volt line between St. Cloud and Sauk Centre, St. Cloud.

(1) $740,000—sub-station at Tanners Lake to serve Minnesota Mining & Mfg. Co., St. Paul.

(2) $336,000—addn. to Ramsey Sub-Station, Rice St. about 3 mi. north of St. Paul.

(3) $140,000—new Rondo Sub-Station, north side of Rondo St. east of Victoria St., St. Paul.

$95,000—imprvs. to sub-station at Wilmarth Steam Plant, Mankato.

(1) $1,500,000—addns. to elec. distr. sys., St. Paul.

(2) $270,000—reconstr. sys., St. Paul.

$97,000—rebuild transmission line between Waconia and Colonge, Waconia, MINNESOTA. Grand total $9,756,000.

▲ **Northern States Power Co.**, 15 S. Fifth St., Minneapolis, Minn., Own Forces, $3,060,000, lay 40 mi gas main, St. Paul; $310,500, add twelve 30,000 gal. propane gas storage tanks, Maplewood Station, St. Paul, MINNESOTA.

▲† **Peter Kiewit & Sons**, 1024 Omaha National Bank Bldg., Omaha, Neb., LB $4,168,845, est. $4,373,691, (17 bidders) constr. SAGE technical facilities, 3 water chillers, Schedule 1; LB $4,155,945, est. $4,368,691, 2 water chillers, Schedule 2, Sioux City Air Force Base, ENG-25-066-59-37, SIOUX CITY, IOWA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Jan. 13. CD 1/6.

▲† **Newport News Shipbuilding & Dry Dock Co.**, 4101 Wash. Ave., Newport News, Va., CA $2,513,846, three hydraulic turbines for Eufaula Dam and power plant, OKLAHOMA. U. S. Eng., Box 61, Tulsa, Okla. CD 12/23, under LB.

BUILDINGS—LB & CA

▲† **Henry Carlson Co.**, 416 S. 2nd Ave., Sioux Falls, S. D. LB $1,690,167 (6 bidders) INTENSIVE TREATMENT BLDG. No. 145 and water softener in BOILER HOUSE, BLDG. 137 at Veterans Admin. Hospital, FORT MEADE, S. D. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Jan. 13. CD 11/26.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

February 11, 13, 19 California

▲† **California**—BA 2/17—U. S. Eng., 751 S. Figueroa St., Los Angeles, channel imprvs., Sawtelle-Westwood Sys., Westwood Branch, Wilshire Blvd. to Pico Blvd., ENG-04-353-59-22. $1,500,000. CD 10/24/57.

HEAVY CONSTRUCTION—LB & CA

▲† **M. M. Sundt Constr. Co.**, 440 South Park St., Tucson, Ariz., LB $1,594,584 (4 bidders) constr. alert facilities Davis-Monthan Air Force Base, NG-04-353-59-39, TUCSON, ARIZ. U. S. Eng., 751 South Figueroa St., Los Angeles, Calif. Bids Jan. 13. CD 12-17.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 1/14,

Gordon H. Ball, Gordon H. Ball, Inc., Ball & Simpson and Lew Jones Constr. Co., 685 Delaware St., Berkeley, Calif., LB $3,870,609 (9 bidders), grade, pave 4.1 mi. 4 lane freeway and 10 structures, Nimitz Freeway between 1st St. and 0.4 mi. north of Bayshore Hy. and between 0.4 mi. north of Brokaw Rd. and 1 mi. south of Taylor St., on Bayshore Hy. IV-SCL-68, 5, 69-B, SJS Santa Clara Co. CD 12/10.

▲ **Morrison-Knudsen Co., Inc., & Darkenwald Constr. Co.**, 2131 Fulton Ave., Sacramento, Calif. CA $3,194,024, constr. Whale Rock Dam, Old Creek, 193 ft. high, earthfill, 40,000 acrce ft. storage capacity, San Luis Obispo Co., CALIFORNIA. State Dpt. Water Resources, 1120 N. St., Sacramento, Calif. Bids Dec. 17, awarded Dec. 31. CD 12/19, under LB.

▲ **J. S. Barrett**, 15722 "E" St. Gertrude St., P.O. Box 2126, Santa Ana, Calif. CA $2,667,727, est. $2,000,000, Miller-Holder Trunk Sewer and Bushard Release Sewer Plant No. 2 to Wintersborg Ave., SANTA ANA, CALIF. Orange Co. Sanitation Dist. No. 3, 1104 W. 8th St., Santa Ana, Calif. Bids Dec. 17. CD 12/23, under LB.

▲† **Gordon H. Ball**, 300 Camille Ave., Danville, Calif. LB $1,772,165, est. $1,794,947, Sched. A, LB $1,782,590, est. $1,825,812, Sched. B (3 bidders), runway primary strengthening and facilities, McClellan Air Force Base, Spec. 234-0A, ENG-04-167-59-17, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Jan. 9. CD 12/5.

BUILDINGS—LB & CA

▲ **James I. Barnes Co.**, 281 S. Thomas St., Pomona, Calif. CA Est. $2,000,000. DISNEYLAND ADDNS., incl. monorail, ANAHEIM, CALIF. Disneyland, Inc., 1313 S. Harbor Blvd., Anaheim, Calif.

▲ **S & S Constr. Co.**, 1750 S. La Cienega Blvd., Los Angeles, Calif. Owner Builds. $1,503,635. 92 stucco DWELLINGS, Septimo St., Lees, Kalin and Salinda Aves., LONG BEACH, CALIF. Hudson & Hansen, 450 N. Beverly Dr., Beverly Hills, Calif., archt.

▲ **San Pedro Community Hospital**, 1305 W. 6th St., San Pedro, Calif., rejected bids Jan. 6, 4 story 140-bed HOSPITAL addn., SAN PEDRO, CALIF. LB $2,667,700. CD 1/9, under LB.

▲ **Carvers Constr. Co.**, P. O. Box 484, Stockton, Calif., LB $1,298,500 (7 bidders), two 3 story cell bldgs. with adjoining 1 story rooms and dining halls and 1 story admin. and vocational training bldg. for RECEPTION GUIDANCE CENTER, at Deuel Vocational Institution, W. O. 4004GC-1 TRACY, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif Bids Jan. 13. CD 12/31.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

February 11 Ontario

▲ **Que., Montreal**—BA 2/12—National Harbours Bd., West Block, Parliament Bldg., Ottawa, Ont. 800 ft. section Champlain Bridge over St. Lawrence River from Nun's Island to Montreal Island. CD 6/28/56.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,

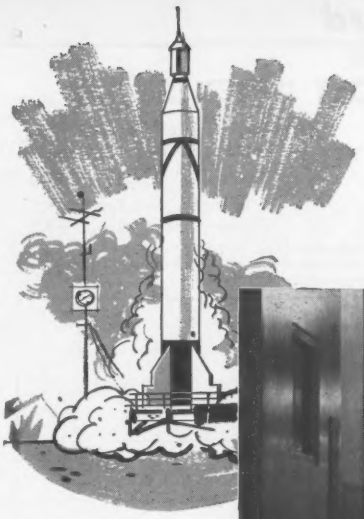
Jamieson Constr. Co. Ltd., 914 E. Hastings St., Vancouver, B. C., CA $2,150,061, constr. 5.75 mi. Taylor Way-Second Narrows Sections Trans-Canada Rd. in North Vancouver Electoral Dist., Proj. 968, North Vancouver. Bids Dec. 2, awarded Jan. 7. CD 1/8, under LB.

▲ **Piggott Constr. Ltd.**, 502 5th Ave. N., Saskatoon, Sask., CA Est. $2,000,000, power development and spillway Snare Rapids power site, approx. 90 mi. northwest of YELLOWKNIFE, N.W.T. Northern Canada Power Comn., 251 Bank St., Ottawa, Ont. Bids Dec. 15. CD 11/14.

BUILDINGS—LB & CA

▲ **Maclab Constr. Co. Ltd.**, 12220 125th Ave., Edmonton, Alta., CA $1,900,948, 2 story, concrete, brick HOUSING UNITS for senior citizens, Gold Bar Subdivision, EDMONTON, ALTA. for River Valley Developments Ltd., c/o 12220 125th Ave., Edmonton, Alta. Awarded Jan. 6.

(Proposal Advertisements see pp. 116 to 118)



7½ MILES OF SPACE ENCLOSURE

at Patrick Air Force Base . . .

A typical example of how J-M Transitop panels economically and attractively partition miles of interior space at Patrick Air Force Base.

—with Johns-Manville TRANSITOP® panels

While scientists experiment with shooting missiles into outer space, administrators at Patrick Air Force Base, Cocoa Beach, Florida, are faced with practical problems of enclosing space for earth-bound personnel.

Transitop panels furnished by Johns-Manville—seven-and-one-half miles of them—were used to provide headquarters space needs. These modern panels, used as interior walls, meet the many different requirements for administrative space enclosures.

Transitop, an insulating structural panel, consists of an impregnated core faced on two sides with incombustible Asbestos Flexboard® sheets. Transitop is available in panels 4′ wide by 8′ up to 12′ in length.

Engineered for durability, Transitop is ideal for use as the interior surface for structural walls or as free-standing ceiling height walls. It also provides every requirement for insulated curtain wall construction.

For the complete story on Transitop, write to: Johns-Manville, Box 158, New York 16, New York. In Canada write: 565 Lakeshore Road East, Port Credit, Ontario.

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36 pages with illustrated sections on Interior Wall Construction . . . Curtain Wall Construction . . . Roof Deck Construction . . . Steel Framing, Wood Framing, Moulding Systems . . . Design Data . . . Special Applications, etc. It's free for the asking.

JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

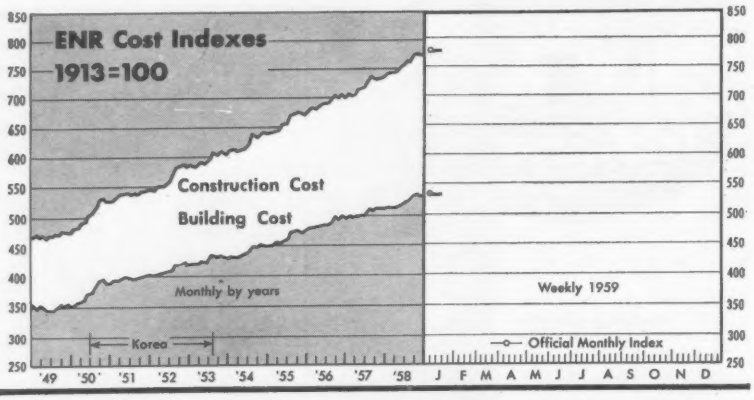
Construction Scoreboard

CONTRACT AWARDS

CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Jan. 15 1959	% Change from Dec. 18 1958	% Change from Jan. 16 1959
Construction Cost	778.59	+0.6	+4.7
Building Cost	536.54	+0.3	+3.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.


ENR Cost Indexes
1913=100
Construction Cost
Building Cost
Monthly by years
Weekly 1959
Korea
Official Monthly Index
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 J F M A M J J A S O N D

AMOUNT OF CONTRACTS LET

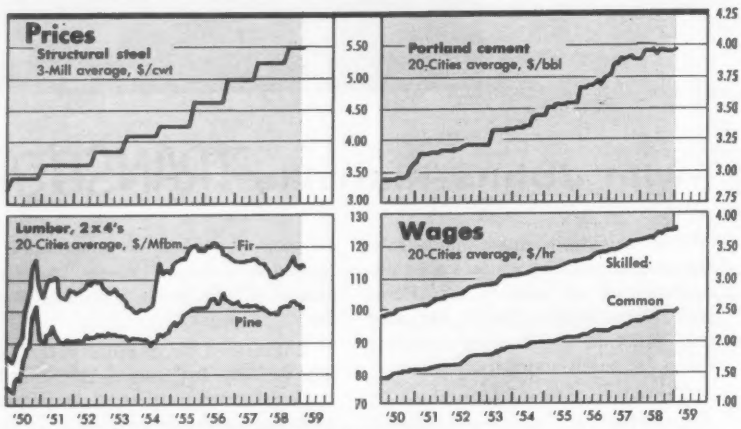
By Ownership	This Week millions	Cum. 4 wks 1959	Chge '58-'59 %
All Heavy Constr.	$388.1	$1,222.9	+41
Private	181.7	454.1	+19
Public	206.4	768.8	+58
State & Municipal	109.4	529.0	+34
Federal	97.0	239.8	+160
By Type of Work			
Public			
Waterworks	7.1	26.4	+19
Sewerage	9.1	46.9	−3
Bridges*	8.4	56.9	+287
Highways	31.4	195.8	+33
Earthwork, Waterways	16.9	45.5	+126
Buildings, Excl. Housing	41.3	208.7	+46
Housing	24.0	43.1	−22
Unclassified	68.2	145.5	+285
Private			
Buildings			
Mass Housing	38.0	154.0	+12
Commercial	88.7	153.8	+65
Industrial	35.6	116.9	+4
Unclassified	19.4	29.0	−22

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53 000; other public works, $88.000; industrial buildings, $110,000; other buildings, $400,000.

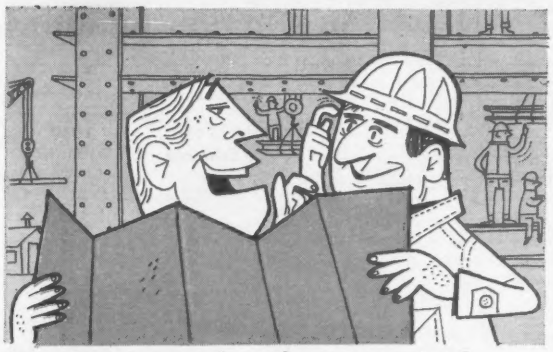
NEW CAPITAL FOR CONSTRUCTION

	Week of Jan. 15 millions	Cum. 3 wks 1959	Chge '58-'59 %
Corporate Securities	$ 50.5	$ 99.1	−19
State and Municipal:			
All Except Housing	48.6	282.6	−25
Housing	...	....	−100
Federal Loans	1.0	4.1	−81
Federal Aid	...	....	....
Total Nonfederal	$100.1	$385.7	−24
Federal Appropriations:			
Projects in U. S.	....	....	....
Outside U. S.	....	....	....
Total New Capital	$100.1	$385.7	−24

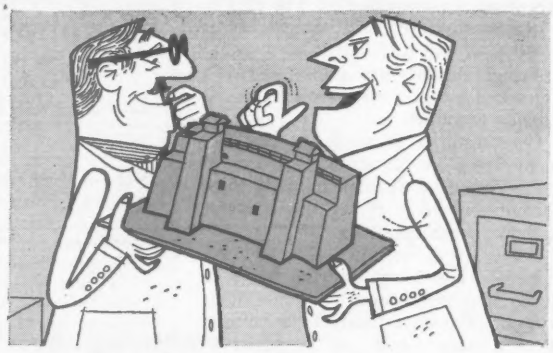


ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Jan. 1959	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Jan. 1959	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	594	+1.7	+8.4	473	+0.2	+3.7
Baltimore	709	0	+5.8	542	0	+4.2
Birmingham	622	+0.5	+4.9	495	+0.4	+3.8
Boston	807	0	+5.5	543	+0.2	+3.8
Chicago	859	0	+2.8	562	0	+6.4
Cincinnati	777	0	+3.9	515	0	+2.2
Cleveland	889	+1.0	+4.2	535	+0.4	+3.1
Dallas	573	0	+4.8	469	0	+4.0
Denver	731	0	+3.0	532	0	+1.9
Detroit	892	0	+4.8	574	0	+5.3
Kansas City	768	0	+3.5	533	0	+3.1
Los Angeles	824	0	+5.9	530	0	+3.3
Minneapolis	839	+1.8	+6.5	554	+0.2	+3.2
New Orleans	617	0	+4.9	494	0	+3.3
New York	962	+2.3	+5.8	624	+2.5	+5.2
Philadelphia	791	+0.1	+2.1	570	+0.2	+1.6
Pittsburgh	827	0	+2.9	595	0	+4.6
St. Louis	844	0	+3.7	566	+0.5	+2.7
San Francisco	813	+0.1	+6.7	533	0	+5.1
Seattle	827	+3.5	+5.4	486	+0.4	+4.3
U. S.—20 Cities' average	778	+0.5	+4.7	536	+0.2	+3.7
Montreal	604	0	+3.4	449	0	+0.7
Toronto	639	+0.2	+4.9	480	+0.2	+1.9



Sales engineers work on the contractor's job...



and in the engineer's office.

They act as trouble shooters...

and advise on maintenance.

Sales Engineer: He Wears Many Hats

Trained engineer, practicing salesman, sometime consultant and highly paid—that's the sales engineer.

In construction, he plays an important role.

What sort of job is it? What does he do? Try this thumbnail description by one sales engineer:

"Last Wednesday I sat on a tree stump and lunched on beer and cheese with an old logger, as I tried to sell him some hauling equipment.

"Next day I joined several executives in a plush Detroit dining room to discuss an assembly-line bottleneck.

"On Friday I paid a return visit to a mechanical engineer who wanted data on one of our high-priced motors."

Every day hundreds of sales engineers appear on construction jobs, in architects' and engineers' offices, or at conventions. They may want you to purchase materials or equipment—anything from a pair of dividers to a power shovel—write your specifications to put their products in the competition or notify them when you have a job for bids.

Whatever their approach, sales engineers can be important to construction. Information they have is often needed in design work, specification writing and estimating. Vendor's drawings can be important documents to architects, engineers and contractors. So can advice be important—on how and where to use the product concerned. Sales engineers often have a whole staff of experts behind them.

• **Money savings**—Many times sales engineers spot savings for their customers. For example, a dozen years ago, when delayed blasting was virtually unknown, a contractor was excavating for a midtown New York City office building. Subgrade was solid rock, and the property was bounded by subway tunnels and high-priced real estate.

The contractor, using instantaneous blasting, was forced to reduce his charges to avoid damaging surrounding structures. With thousands of yards of rock to be excavated, the job moved at a snail's pace.

A sales engineer from the explosives supplier suggested delayed blasting—a series of blasts with millisecond delays—to avoid the great impact of instantaneous explosions. With specialists from his firm, he worked out the quantities, timing and drill patterns needed.

Result: The contractor cut his man-hours on the job 35% and reduced property damage claims to practically nothing.

The sales engineers' interests don't end with the order. After delivery, they visit the job to make sure products are being used properly and to greatest advantage. They advise on maintenance—trouble-shoot, if necessary.

• **They're professionals**—The popular concept of a salesman—a back-slapping, story-telling extrovert—generally doesn't fit the sales engineer. More often he's a serious, quiet individual whose strength is engineering rather than glad-handing. Many are registered engineers.

How does selling attract good engineers? The biggest attraction is money.

"I know of two ways to make money in engineering," says one sales engineer. "If you have the experience, become a consultant. If you have the potential, become a sales engineer."

Top sales engineers can earn $18,000 yearly. The average is about $12,000

plus commissions or bonuses. Typical incentive: A commission of ½% to 1% on contracts closed or a straight bonus of 10% of the base salary.

Fringe benefits are often generous: unlimited use of a company car, liberal expense accounts.

Opportunities to reach the management level are plentiful. Surveys of major industrial firms perennially show a large percentage of top management is drawn from the sales staff.

Some are drawn into sales work because the laboratory, drawing board or field job doesn't appeal to them. They welcome the opportunity to travel and meet a wide variety of people with diverse personalities and problems.

• **Not all fun**—The work has its frustrations, too.

Sales engineers dislike: "The guy who bleeds you for information and then throws the job wide open. . . . The man who is indecisive. . . . The fellow who cuts the pie up into little pieces to satisfy everyone."

"Our greatest complaint is against the fellow who takes you for a ride," says one. "I called on an architect last fall who needed a great deal of information about our curtain walls. In the next several months we saved him thousands of dollars by furnishing dimensions, design data and advice. Yet he turned around and gave the job to one of our competitors."

There is a conflict between consultants and manufacturing companies. Consultants have complained that manufacturers' sales engineers, and the experts behind them, are infringing upon the consulting engineer.

Manufacturing companies, on the other hand, often complain that designers and engineers use their staffs as unpaid consultants. Some companies refuse to perform certain design and preparatory work for potential customers.

Most sales engineers have engineering degrees. But they often get training beyond college.

One large manufacturer of construction equipment puts each of its sales trainees through a one year program. During this time they do everything from assembling transmissions in the shop to serving as a trouble shooter in the field. Such extensive training programs are common.

A 35-year veteran sums it up this way: "To be good, you need a sound engineering background plus the perseverance of a reporter, wisdom of an elder statesman, tact of a diplomat, enthusiasm of a teen-ager, patience of a teacher and the broad shoulders of a country doctor."

Eisenhower's New Construction Budget

(The story on the President's budget is on page 24.)

Civil Works

	Fiscal Year Expenditures (in millions) 1959 Estimate	1960 Estimate
Federal Construction:		
Capitol Hill Buildings	$21.6	$54.7
Federal Aviation Agency	120.4	143.1
National Aeronautics and Space Administration	25.0	35.0
General Services Administration	103.9	148.3
Veterans Administration	45.0	55.0
St. Lawrence Seaway	17.3	4.5
Tennessee Valley Authority	138.0	129.0
Department of Agriculture	87.4	73.2
Corps of Engineers	564.8	663.9
Dept. Health, Education, and Welfare	18.3	28.8
Department of the Interior:		
Bureau of Reclamation	214.3	198.2
Bonneville Power Administration	20.2	23.6
Bureau of Indian Affairs	37.7	35.1
National Park Service	67.4	48.9
Other	25.8	19.9
Post Office	24.5	49.8
Department of State	30.0	22.5
Other	50.1	78.6
Total, Federal Construction	1,611.7	1,812.1
Grants to State and Local Governments:		
Federal Aviation Agency	49.9	54.6
Soil Conservation Service	25.9	27.8
Office of Education	69.4	41.8
Public Health Service	90.3	92.5
Other	49.5	16.1
Total, Grants	285.0	232.8
Loans to State and Local Governments, (net):		
Housing and Home Finance Agency	181.6	147.9
Bureau of Reclamation	9.7	6.8
District of Columbia	6.0	7.4
Other	6.9	3.9
Total, Loans	204.3	166.0
Total, Budget Accounts	2,100.9	2,211.0
Trust Funds		
Federal Construction	16.6	16.0
Grants, Bureau of Public Roads	2,425.4	3,015.4
Total, Trust Funds	2,442.0	3,031.4
Total, Civil Public Works	4,542.9	5,242.4
REA-Co-ops, Nonprofit Hospitals etc.	498.5	488.6
TOTAL CIVIL WORKS CONSTRUCTION	5,041.4	5,731.0

Defense

Military Public Works	2,003.0	1,693.0
Atomic Energy	240.0	280.0
TOTAL DEFENSE CONSTRUCTION	2,243.0	1,973.0
Total, Federal Construction	7,284.4	7,704.0

Georgia Road Board Gets New Broom

The new chairman of the Georgia State Highway Board has wasted no time in "sweeping clean" his agency. In rapid succession, chairman Jim Gillis:

• Fired 391 highway department employees on recommendations from his division engineers. "This is just a starter," said Mr. Gillis.

• Canceled $1 million in purchases.

• Demoted a division engineer and three assistant division engineers.

• Prohibited drinking on the job.

• Prohibited highway employees from accepting gifts and entertainment from firms doing business with the highway department.

• Ruled that field employees may not attend contract lettings unless requested by the chief engineer.

(*B&F continued on page 109*)

"with a BAY CITY
I can control it right
...and right now!"

SIMPLE, TROUBLE-FREE AND INSTANTANEOUS CONTROLS
MEAN FASTER OPERATION... PEAK PRODUCTION

PERFORMANCE PROVED

BAY CITY

278

THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN, U.S.A.

107

BOND BREAKER, MOISTURE BARRIER! VISQUEEN TRADEMARK FILM SAVED MONEY BOTH WAYS

Ross & Farthington Construction Company, Wichita, Kansas, scored twice in saving when they used VISQUEEN film in construction of the Osage City School. Architects Williamson, Loebsack and Associates specified VISQUEEN film as a bond breaker because the film produces better concrete surface finishes and achieves great financial savings for contractor and Board of Education through re-use of one set of forms.

The architects specified VISQUEEN film as a moisture barrier under the slab floor because it provides lowest cost *permanent* protection against penetration of subsoil moisture.

Only VISQUEEN Film is Made in* Seamless *Widths to 32 Feet

Write or use the information request tag for use and application details.

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Trade Mark
clip this tag. #EN1
attach to letterhead, mail.

VISQUEEN *film—first and foremost polyethylene film.*
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Congress Rushes Housing Bills

Two major omnibus housing bills are already before the two-week-old Congress. Chances appear good Congress will present President Eisenhower with expensive new housing legislation within 10 to 12 weeks.

The quick action stems from the determination of Democratic leaders in the House and Senate to push through a liberal housing program.

The housing bills are a direct challenge to the President's plea for economy and could provoke a veto. But Congressional Democrats think they can muster the two-thirds vote needed to override a veto.

In the Senate, Sen. John J. Sparkman (D., Ala.) has introduced an omnibus housing bill featuring more money for the Federal Housing Administration, urban renewal, public and college housing and direct veterans' housing loans.

In the House, Rep. Albert Rains (D., Ala.) is sponsoring a similar, but somewhat more liberal, bill.

• **The Sparkman bill**—The Senate housing bill has these highlights:

• **A new FHA mortgage insurance authorization of $8 billion**—$4 billion for the remainder of the current fiscal year, $4 billion for the year beginning July 1. An Administration-backed bill asks for $6 billion at once, but this is expected to die in the House.

• **A six-year urban renewal program** providing $300 million annually, plus $150 million a year to be used at the discretion of the President. The Administration has asked for only $100 million for one year, plus $100 million to replenish the President's discretionary fund.

• **Extension of authority** for 40,000 public housing units, plus 17,500 additional units to be authorized. Some Democrats are expected to demand up to 200,000 units each year until the 810,000 units provided by the 1949 Slum Clearance and Urban Redevelopment Act are built.

• **New funds for college housing loans** worth $525 million, including $125 million for academic buildings.

• **Direct housing loans for veterans in rural areas** where credit is scarce. Senator Sparkman is asking $300 million.

• **The Rains bill**—The bill introduced in the House is similar to the Senate's legislation, but it has these additional provisions:

• **"Several hundred million dollars" for the Federal National Mortgage Association** (Fannie Mae), which would use this money for purchase of VA and FHA mortgages.

• **Carte blanche for FHA mortgage insurance authorization.** (Representative Rains says, "It is impossible now to determine an appropriate figure.")

• **A top figure of $25,000 on FHA mortgages for one and two-story homes.**

• **Lower minimum downpayment requirements on FHA-backed homes.** The current 15% down payment on homes costing $13,500 to $16,000 would be cut to 10% for homes in the $13,500 to $18,000 range. A 25% down payment on homes over $18,000 would replace present requirements for a 30% down payment on homes over $16,000.

• **A cut in the FHA mortgage insurance premium to ½% from ½%.**

The Rains bill also provides an additional $500 million for college housing loans, $200 million in housing for the aged, $500 million to support FHA and VA mortgages and $75 million for cooperative housing.

The Congressman describes his omnibus housing bill as "an improved and expanded version of last year's bill, which was defeated in the House."

• **A comparison**—The Sparkman bill recognizes Fannie Mae's need for more money to buy VA and FHA mortgages. It extends the 1958 Special Assistance Program an extra year, to August 8, 1960.

Representative Rains is asking for a broader program. He seeks to bolster the VA program by accumulating VA-insured mortgages through direct purchase rather than by raising interest rate ceilings on them.

There is powerful Congressional opposition to higher VA interest rates. Chairman Olin Teague, of the House Veterans Affairs Committee, is even talking about extending World War II and Korean veterans' loan programs. He also wants a loan program for veterans drafted after the 1955 Korean cutoff date. These men would pay a small premium to cover the VA's handling costs.

Another difference in House and Senate bills: Representative Rains wants to cut downpayment requirements on FHA-backed homes, Senator Sparkman leaves them alone.

Norman Mason Takes Over As HHFA Administrator

Norman P. Mason last week succeeded Albert M. Cole as Administrator of the Housing and Home Finance Agency. Mr. Mason was head of the FHA for five years and has been serving as Mr. Cole's assistant.

Before leaving the job, Mr. Cole predicted the 1959 housing starts will hold about steady with 1959. This forecast, however, could be upset by the housing legislation that Congress finally passes.

Preliminary figures for 1958 show 1.2 million new housing starts, 1.13 million of them private. That's the fourth highest start on record, 15% above 1957.

Pipeliners Fear Steel Strike

Pipeline construction men believe this could be a record or near-record year for them if there is no steel strike this summer.

At the 11th annual Pipeline Contractors Association Convention in Miami last week, 700 material suppliers, equipment manufacturers, equipment maintenance men and pipeline contractors gave these four reasons for more business:

• Heavy backlog of work.

• More money available for transmission lines. Last year set a record for money spent on gas transmission lines—the lion's share of pipeline work.

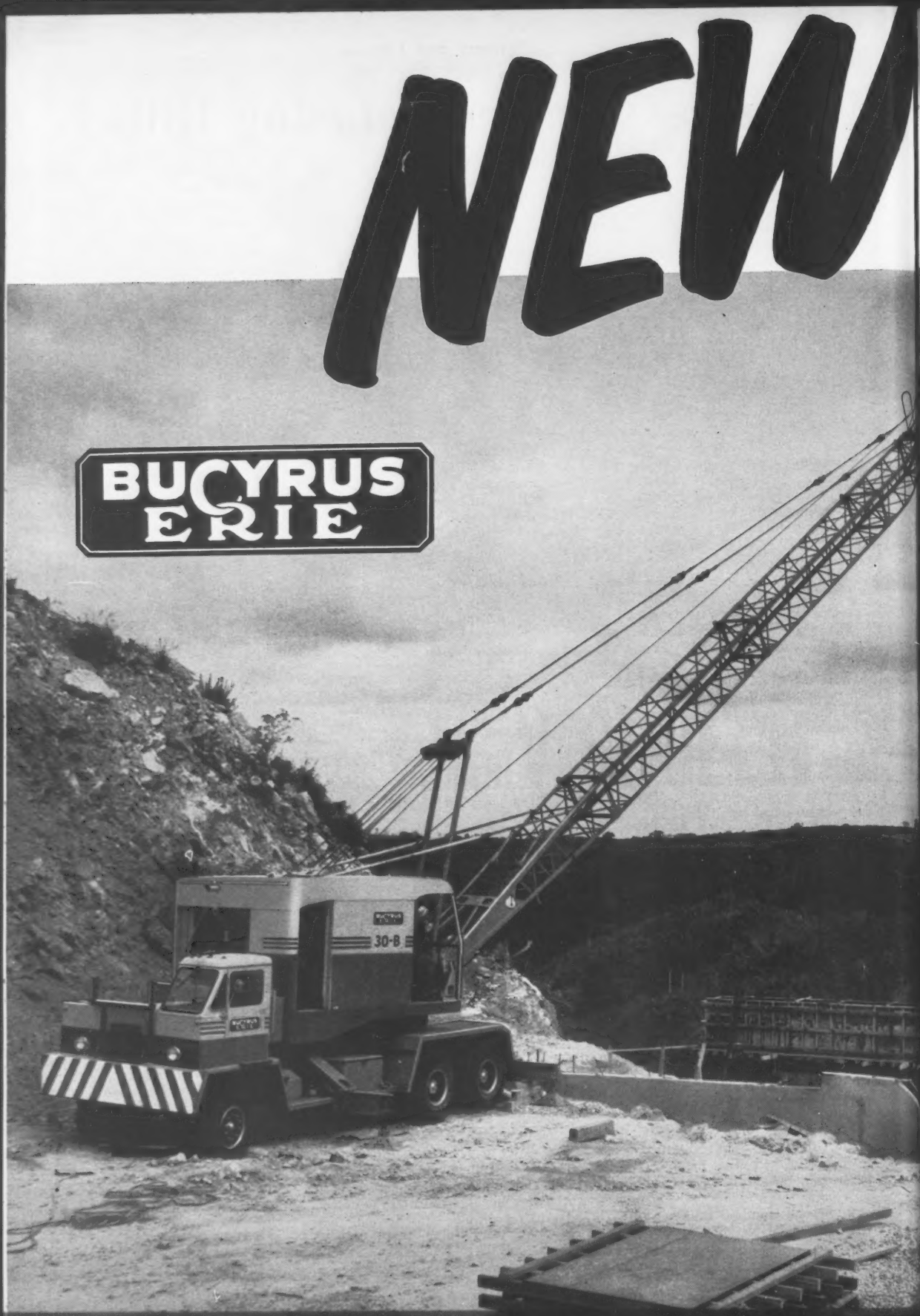
• Greater demand for natural gas.

• Recent Supreme Court reversal of the "Memphis ruling." This decision means gas pipeline companies no longer have to get advance consent from their customers before filing for a rate increase with the Federal Power Commission (ENR Dec. 18, 1958, p. 32).

Industry spokesmen fear these gains could be wiped out by a prolonged steel strike this summer. "We can't stockpile very much pipe. So, there won't be a pipeliner working if the steel strike lasts very long—and I'm afraid it will," says one pipeline contractor. "And if it comes, it probably will be a long one."

The present three-year contract between the United Steelworkers of America and the steel industry expires July 1. Both sides are readying arguments for new negotiations, which will probably begin in May. A tough fight is brewing.

Steel industry officials, under fire for price raises, seem determined to resist further increases. Wage increases and a shorter work week could make it difficult to hold prices in check.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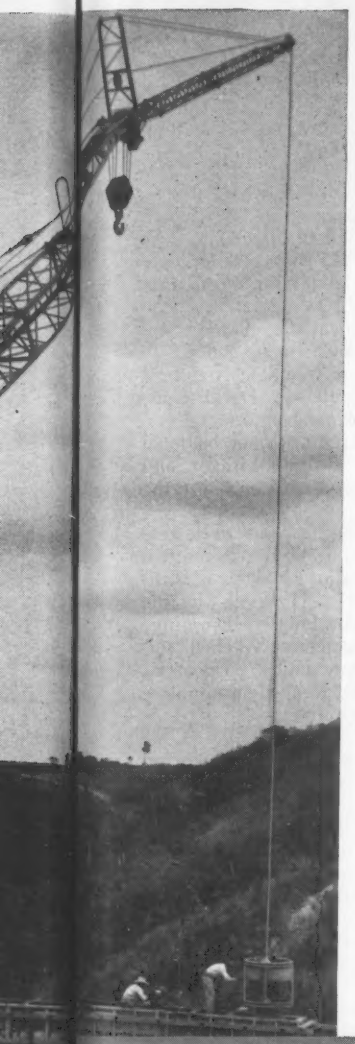

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The Outlook for a Labor Bill

- **On reform: Congress will probably pass a milder bill than is now being pushed by the Administration.**
- **On Taft-Hartley: At the least, you can expect some minor changes of this law to be included in the new reform bill.**
- **Big question: Will Senator Kennedy be able to steer the reform bill clear of the more basic Taft-Hartley controversy?**

The 86th Congress is heading into a wrangle over labor legislation, but with good prospects for approval of a union reform bill and some Taft-Hartley construction labor amendments.

High on the legislative priority list of the new Congress, the White House and organized labor is an anti-racketeering measure that would help to wipe out union corruption uncovered in two years of investigations. Tied to the push for reform are a number of amendments to Taft-Hartley that may be tacked on to a reform bill.

Among these amendments are two long-sought by the AFL-CIO Building Trades Department with some support from contractors:

- Legalization of pre-hire labor contracts containing a seven-day union shop clause.
- Removal of any doubts about the legality of employer contributions to apprentice training funds.

All the labor proposals currently under consideration were rejected by Congress last year. But this time, some new developments are improving the prospects for the first major labor legislation in 10 years. This appears to be true despite the fact that no clear lines have yet been drawn on the extent to which basic legislative changes may be isolated from reform legislation.

• **Significant developments**—The big developments that offer the promise of some positive action are these:

- The new Congress contains substantial liberal majorities that are likely to heed the AFL-CIO appeal for labor reform. And the addition of three more Democrats on the House Labor Committee and two more on the Senate Labor Committee "increases immeasurably" the chances of such legislation, says Rep. Edith Green (D., Ore.), a House Labor Committee member.
- The Eisenhower Administration, equally interested in reform, has narrowed the area—but not the vigor—of the coming debate. A surprising alliance of the GOP's liberal and conservative labor spokesmen, Labor Secretary James P. Mitchell and Arizona Senator Barry Goldwater, has isolated two major issues to be resolved before a bill can be passed.

Even before the fight begins, Senator Goldwater says it's "naive" to expect the GOP position to be adopted by Congress. But, with Secretary Mitchell, he's prepared to carry the Eisenhower Administration position through the Senate Labor Committee, where he is the ranking minority member.

The legislative contest will center on two key demands in the Eisenhower Administration's labor package—a ban on "blackmail" picketing and secondary boycotts, particularly the "hot cargo" type of contract. "Without these provisions," says Senator Goldwater, "it cannot be considered an anti-racketeering measure." Secretary Mitchell agrees these are "must" items in reform legislation.

However, George Meany's AFL-CIO opposes any such curbs as outside the racketeering area. He argues they should be taken up in separate Taft-Hartley legislation, if at all. His position is backed in Congress by Massachusetts Democratic Senator John F. Kennedy, whose Kennedy-Ives bill was defeated in the House last session.

Senator Kennedy will reintroduce his old bill, with some minor changes. The odds are in his favor this time.

In an attempt to isolate major Taft-Hartley Act matters from reform legislation, Senator Kennedy has appointed a nine-man committee of labor experts to review the law. The committee is supposed to recommend to the Kennedy labor subcommittee the specific amendments that should be made in the basic labor law. The plan is to consider these suggestions after labor reform legislation is out of the way.

Among the members of the committee are Louis Sherman, counsel to the electrical workers union; Archibald Cox, Harvard professor; David Cole, AFL-CIO "no raiding agreement" arbitrator; Guy Farmer, former National Labor Relations Board chairman, and Arthur Goldberg, special counsel to the AFL-CIO.

Senator Kennedy expects to receive considerable help from the committee "in identifying major problems in Taft-Hartley revision." However, if the special construction industry committee appointed by Secretary Mitchell several years ago for similar purposes is any criterion, the Kennedy committee is not apt to get very far.

• **Strategy and prospects**—Senator Kennedy and the labor leaders hope to achieve a reform bill just touching on Taft-Hartley. They would alter the labor-management law by the building trades amendments and several others, such as permitting economic strikers to vote in representation elections, and requiring the National Labor Relations Board to take smaller labor cases now falling into a "no-man's land" territory.

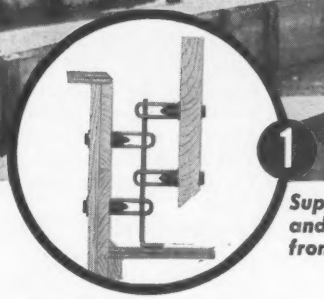
Since even Senator Goldwater predicts defeat of the GOP position, the outcome will probably resemble the Kennedy legislative version. Although his bill and the Eisenhower plan differ on other reform measures, they are not so far apart that these cannot be compromised.

Essentially, the reform bill centers on new federal rules for reporting union financial operations, election of union officers and payments by employers and "middlemen" to union officials. Pen-

(*Continued on page 114*)

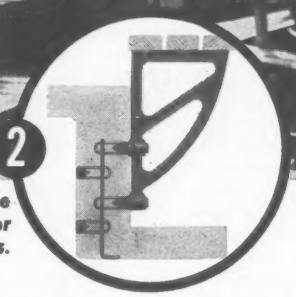
Building a Grandstand, Stadium, Balcony?

SUPERIOR RISERFRAMES Perform Two Functions



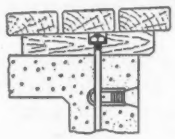
1

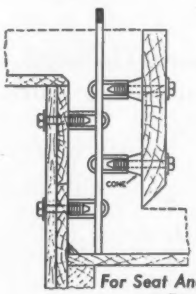
Support, space and align front riser form.



2

Provide secure anchorage for seat brackets.





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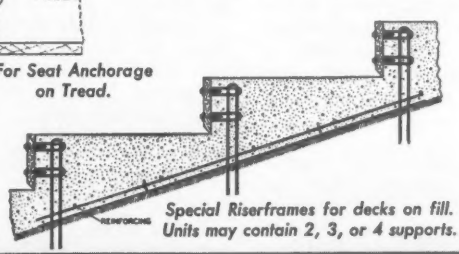

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alties for union officers violating the rules are provided. (The White House and Kennedy programs differ somewhat in the extent of punishment.)

With everybody pushing at least in the same legislative direction, there is little doubt that a new law will be enacted. But it will not come easily.

The new teamwork of Senator Goldwater and Secretary Mitchell is one factor in making a contest. Last year, they were outspoken opponents on labor legislation, with Senator Goldwater demanding extensive curbs on union monopoly, political action and union security.

This time, he says, he reads the political handwriting and will give up on these more stringent proposals to join with Secretary Mitchell on the picketing and boycott provisions. The "blackmail" picketing proposal would bar unions from picketing plants where they do not represent a majority of employees. The boycott ban would make illegal the "hot cargo" contract where a neutral employer is pressured into taking sides with a union against another employer.

"These are a prime source of violence, shootings, muggings and other kinds of conflict," says Mr. Mitchell. But, while he insists any reform bill must include such amendments, he doesn't say whether he would recommend that President Eisenhower veto a reform bill that doesn't include them.

In any case, the Goldwater-Mitchell alliance may have surprising support in Congress. Except for a few liberals, most Republicans will vote their tougher reform measure. They may also pick up support from Southern Democrats. This depends on the stand taken by Sen. John L. McClellan, whose committee investigation broke open the racketeering issue and who supported the Kennedy-Ives bill last year. This time indications are he may demand something stronger.

The new committee line-ups—both the House and Senate Labor Committees are weighted with liberals—almost assure that a labor-approved reform bill will come out of both committees. Toughening amendments would come from the floor. And that is where the Kennedy-Administration contest is apt to occur.

The conservative chairman of the House Labor Committee, Graham Barden, now heads a committee of 20 Democrats, 10 Republicans.

With Mr. Barden and the GOP likely to be outvoted and the Senate Labor Committee heavily manned by liberals on the Democratic side, voting on labor legislation should come early in this session of Congress.

Labor Seeks Broad Tax Reforms

Larger share of the tax burden would shift to industry and management under AFL-CIO proposals

The AFL-CIO has launched a new campaign for major tax reforms. If it is successful, every company, firm and individual of substance in the construction industry will be hit by higher—and possibly more—taxes.

The recommendations would make commercial enterprises and individuals in the higher income brackets bear a larger share of the tax burden.

The program amounts to taxation based on ability to pay. It involves what labor considers "more realistic" property taxes and "more progressive" gift, and local and state income taxes and a less liberal federal income tax.

The recommendations are not new. The dimensions and mechanics of the program, however, are new and significant. In view of labor's November election successes and the ability of the AFL and CIO to speak with a single voice as a result of the labor mergers, the campaign is bound to be a sobering one for many.

• **Its scope**—Core of the program is a massive, long-range educational campaign at the local level.

First step suggested is the organization of local labor committees to study existing tax structures and how they affect the various groups of taxpayers. The committees are supposed to seek the help and cooperation of local educational and civic groups.

Following this study and analysis, labor at the local level is urged to launch a program of public education "to persuade" local elected officials that the AFL-CIO's ideas on taxes reflect the will of the people and are both sound and good.

Final step, of course, is new legislation in city councils, state legislatures and Congress to bring tax relief to low-income groups and higher taxes to corporations and individuals of means.

• **The reasoning**—Behind the program is the AFL-CIO economic theory that reduction of taxes paid by low-income groups is an effective means of meaningfully increasing consumer purchasing power. It believes this is essential to a full-production, full-employment economy.

The federation again renews its charge that our tax laws unduly favor corporations and wealthy individuals because of special devices inserted in the laws.

It considers real estate valuation for property taxes assessed against industrial concerns "often shockingly low."

And it suggests that a larger portion of the over-all tax burden be absorbed by those best able to pay under new city and state income taxes of a "progressive nature." Such taxes, as well as tougher state gift, estate and inheritance taxes, it says, can be introduced "without in any way extracting unreasonable amounts from the well-off."

• **The specifics**—Among the various tax reforms suggested by the AFL-CIO are these:

- Boost the individual federal income tax exemption from $600 to $700.
- Repeal of the dividend tax credit and a withholding tax on dividends.
- A holding period for long-term capital gains and higher capital gains tax.
- Taxation of income from state and local bonds.
- Less liberal depletion allowances for federal income tax purposes.
- Progressive state income taxes in all states.
- Taxation of corporation profits by all states.
- Complete and unrestricted local autonomy in the levying of property taxes and the borrowing of money.
- Diversion of all state gasoline taxes to general uses.

State Engineers Ordered To Quit Spare-Time Work

Kentucky Highway Commissioner Ward J. Oates has ordered highway department engineers to stop taking spare-time employment with consulting firms that do work for the state.

"A man simply cannot work eight hours for the highway department, rush home for a bite to eat, and then do several hours' work for someone else," says Mr. Oates. "If he tries it, he is not in condition to work for us the next day." The order is not meant to reprimand employees or consulting firms, he says.

In the future, employees will be permitted to accept free-lance assignments only from firms not qualified to accept state contracts; and then only on weekends, when there is no fatigue factor.

Mr. Oates further directed that contracts with consulting firms be amended to tighten prohibitions against hiring state personnel.

Consultants Ponder 'Commerce'

Supreme Court extends Minimum Wage Law to firms in 'interstate commerce'; but offers no guideposts

Architectural and consulting engineering firms have been pushed into a legal guessing game by last week's U. S. Supreme Court decision on the Fair Labor Standards Act, often referred to as the Minimum Wage Law.

The court ruled that draftsmen, fieldmen, clerks and stenographers working on plans and specifications for construction work on interstate projects are engaged in interstate commerce. They are therefore entitled to the protection of the federal law.

This means they must be paid at least the minimum wage (now $1.00) and time and a half for overtime after 40 hours. Employers must also keep complete payroll records and preserve them for three years.

The ruling materially strengthens the hand of the U. S. Labor Department, which has been conducting a vigorous enforcement campaign.

Compliance with the ruling, however, is not as easy as it sounds because there is no blanket rule for determining when an employee is engaged in interstate commerce. Part of this dilemma stems from an earlier decision—known as the Vollmer case—in which the court attempted to define "interstate commerce" in practical rather than technical terms.

Result is that a firm in doubt about the application of the law has only a few nebulous guideposts to help it.

In order for the law to apply, the project to which the plans and specifications relate must be in interstate commerce—as that term is now broadly construed—and the employees in question must be "intimately engaged" in the preparation of the plans and specifications. Because of the Vollmer decision, new construction is not necessarily exempt from the law.

What this means, the court said, is this: "The test is whether the work is so directly and vitally related to the functioning of an instrumentality or facility of interstate commerce as to be, in practical effect, a part of it, rather than isolated local activity."

The National Society of Professional Engineers is "very unhappy" about the decision. In a brief filed with the court, it argued that Congress never intended to apply the law to the selling of advice even though that advice might be reduced to plans and specifications. The only way a firm can now escape the law, it says, is to convince a court that the project it is working on is not in interstate commerce.

• **How it works**—Here is an example of the law's application.

An architectural and engineering firm has offices in Norfolk and Washington. Many of its clients are outside Virginia and the District of Columbia. More than half its projects are initiated by government agencies.

Typical projects are a standard mobile Army warehouse, widening of streets at a naval base, extension of a Naval Air Station runway, relocation of radio stations, turnpike improvements and repairs to government buildings.

Fieldmen gathering the necessary information often cross state lines. Draftsmen use the information in preparing plans and specifications. Clerks and stenographers help in the mechanical preparation of the plans and specifications and engage in related correspondence, telephone and payroll work that crosses state lines.

The firm is Lublin, McGaughy & Associates and these are the facts under which the Supreme Court said the law applies to about 50 of the firm's nonprofessional and technical employees.

• **The reasoning**—At the outset, the court said, one must look at the employees and not the employer. For the activity of the employees and not the business of the employer is the controlling factor. One must also bear in mind, it noted, that although the activity of employees must do more than merely "affect commerce," the law is to be "construed liberally to apply to the furthest reaches."

Following these premises, the court concluded that the activities of the employees related to existing interstate facilities. (Because none of the facilities was new, the court did not have to discuss the fuzzy "new construction" exemption.)

This relationship, it reasoned, is both vital and direct because "without the preparation of plans for guidance, the construction could not be effected and the facilities could not function as planned." The employees, therefore, were engaged in interstate commerce.

The court did not discuss or decide whether the employees were engaged "in the production of goods for interstate commerce"—which is the second situation to which the law applies. And it noted that professional employees—architects and engineers—are exempt from the law.

NCA Notes Labor Achievments

The National Constructors Association is optimistic about the business future and feels that considerable progress has been made in the labor relations field.

At its annual meeting, held in New York City last week, NCA President Carl B. Whyte reported that association members have found a marked upturn of industrial interest in new plant facilities and in modernization programs. The latter, he predicted, will represent a significant portion of 1959 capital expenditures. This pick-up, Mr. Whyte said, will be reflected in increased engineering activity during the early part of this year (see page 128).

NCA is composed of 26 of the nation's larger engineers and builders of chemical plants, petroleum refineries, power plants and steel mills.

The association, which is engaged in a concerted program to improve labor relations in its field, says two "forward steps" were taken in the labor field in 1958. One was the launching of the "Ten Commandments" to reduce wasteful work practices. The other was the insertion of new hiring provisions in nine international labor contracts negotiated by NCA.

Labor productivity in NCA operations has improved materially, says Mr. Whyte. He attributes this to the "Ten Commandments" and a labor market that allows selection of more competent workers.

Biggest challenge ahead of the labor front, he indicated, is living safely with the Mountain Pacific-Brown Olds mandate on hiring practices. The trouble here, Mr. Whyte explained, is that the mandate still represents a virtual "pig-in-a-poke."

New president of NCA is W. R. Wood, head of the Girdler Construction Division of Chemetron Corp., Louisville. Donald Darnell, chairman of The Flour Corporation, Ltd., Los Angeles, succeeds Mr. Wood as NCA vice president.

(*Labor Continued on page* 116)

Ouster of Nonunion Sub Illegal

A contractor cannot dictate the union affiliation of his subcontractor's employees. If he tries to do so, he is headed for trouble.

That warning comes from the National Labor Relations Board, which has again struck down the same type of subcontractor clause that plagued a California engineering firm a year ago. (The latter involved Local 3 of the operating engineers union and St. Maurice, Helmkamp & Musser, which was doing subcontract work at the Travis Air Force Base.)

This time the trouble occurred on a Johns-Manville building project covered by an Associated General Contractor-teamster labor contract. The contract contained what the board called a prehire clause. It required employees of the general contractor doing teamster work to join the teamsters union and imposed the same requirement on employees of all subcontractors.

A subcontractor who was to install the roofing, siding and decking hired a nonunion subcontractor to haul some of the building material. The teamsters claimed a breach of contract, objected to the use of the nonunion subcontractor and induced the roofing contractor to oust him.

• **Discrimination**—Three members of the board found that the union had violated the Taft-Hartley Act in two respects. The teamsters' action, they said, unlawfully coerced the subcontractor's employees and was an unlawful attempt to make the subcontractor discriminate against his own employees.

They also said the prehire clause was itself invalid because it seeks to foist upon employees of both general and subcontractors a bargaining representative not of their own choosing. It could not be used, they added, to defend or justify the ouster of the subcontractor.

If the roofing contractor had been before the board, the majority continued, it would also have been found guilty of interfering with the freedom of choice guaranteed employees in union or nonunion affiliation and of discrimination in employment based on nonunion membership.

• **Secondary boycott**—The board majority refused to view the subcontractor's ouster as a lawful secondary boycott.

The firing of the subcontractor had as its objective, they said, "not the cessation of business for valid economic consideration" but "the discrimination against (the subcontractor's) employees because of their nonmembership in the union."

Board Member John H. Fanning disagreed. He said the roofing contractor had a right to discharge the subcontractor and that the ouster amounted to a boycott that the law permits.

Under the Taft-Hartley Act, he noted, any employer may boycott another employer. And the union or nonunion status of the boycotted employer may be a valid business reason, he added.

Mr. Fanning also asserted that a union is free to approach an employer to persuade him to engage in a boycott as long as it refrains from pressure on employees to induce the boycott.

He rested his arguments on the Supreme Court's decision in the Sand Door case. There, the court said the law does not forbid all types of secondary boycotts. It described as lawful the types mentioned by Mr. Fanning.

The upshot of it all, however, is that the NLRB will apparently continue to crack down on all subcontractor clauses or contractor or union actions that discriminate against workers because of their nonunion status or that tend to force workers into a union not of their choice. The case also points up the need for a clarification of the secondary boycott provisions now in the law.

Jobless Rise Blamed on Weather

Unemployment continues to be a serious problem.

In mid-December, 4.1 million persons were out of work, according to the latest government figures. This is an increase of 300,000 over the November total and is 726,000 above the figure for a year ago.

On the brighter side, there are over a million fewer unemployed persons than there were last June, when recession joblessness reached its peak.

The December upturn in unemployment was attributed by Labor Secretary James P. Mitchell and Commerce Secretary Louis Strauss to unusually severe December weather, which brought cutbacks in farming, construction and other outdoor activities.

Construction workers were severely affected. The number employed in contract construction last month, according to the Bureau of Labor Statistics, fell to 2,486,000. This is down 300,000 from November, down 126,000 from a year ago and down 467,000 from the 1958 employment peak reached in August.

• **Recovery continues**—The general job situation in the nation's economy, however, was described by federal officials as "much improved by the end of 1958."

Employment in durable goods manufacturing industries, which was the sector of the economy hardest hit by the recession, had recovered about 30% of the losses by mid-December. Here, the government says, the recent gains have been primarily in automobile and steel production.

Transportation and mining industries, on the other hand, have made no recovery in employment since their April low point.

The average weekly earnings of factory workers has risen sharply, BLS reports, and by the end of the year hit an all-time high of $88.04. This is attributed to a December rise in the workweek, because of overtime, to 40.2 hours and to a two-cent increase in average hourly earnings, which now stand at $2.19. Implicit in these figures is the fact that recovery has been more rapid in hours worked than in fuller employment.

• **Insured unemployment**—Long-term unemployment, however, remains high despite the gradual recovery from the recession, the government reports.

It says that insured unemployment rose by 250,000 in December to 2 million, with all states reporting higher levels.

At the same time, an estimated 200,000 persons exhausted their unemployment insurance benefits. This compares with 180,000 exhaustions in November and 110,000 a year ago.

Sheet Metal Union Chief Gives Labor a Reminder

Robert Byron, general president of the Sheet Metal Workers International Association, has reminded members of his union that they are not walking down a one-way street.

In discussing labor's "many-fold responsibility," he made this observation:

"We have a responsibility to the public as craftsmen to do a good job on the job every day. We have a responsibility to give 100 cents for every dollar received in wages."

The comment appears editorially in a recent issue of the union's monthly journal.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: January 29, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law and Special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 29th day of January 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1; G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Washington	FASSH 59-3	Morrows Corners-West Granville Proj. S-534(1)	4.50	Bit. Double Surf. Treat. Stone=4.47 Mi.; Misc. Work=0.03 Mi.	$33,000 Plans $5	$608,000
Albany	M 59-1	Ontario Street Bridge, Cohoes (Old Champlain Canal)	0.02	Replac. Exist Bridge with Corr. Metal Pipe Culv. and Misc. Work	$1,400 Plans $10	$27,000
District No. 4; B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	LOSP 59-1	Lake Ontario State Parkway Sections A and B	10.40	Landscaping	$6,000 Plans $5	$107,000
DISTRICT No. 5; E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Niagara	M 59-2	Sulphur Springs Bridge E-239 over Erie Barge Canal	....	Clean. and Paint. Thru Truss Bridge 148' Span	$250 Proposal Only No Plans $2	$4,500
DISTRICT No. 6; James H. Thomas, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany (Rte. 21)	FGRC 59-3	Andover-Alfred Station, Almond, S.H. 5502 Proj. FG-589(6)	0.52	9" Cem. Conc. Pavt.; 20' Wide R.R. Sep. Plate Girder 106.5' (1 Span)	$29,000 Plans $5	$537,000
DISTRICT No. 7; Robert W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton (Int. Tour. Rte. 87)	FISH 59-2	Interstate Route 502, Sect. 7B-1 (Salmon River to Rugar St.); Plattsburg-Keeseville, Pt. 1, S.H. 56 and Access Roads Proj. I-IG-1119(20)	4.19 (3.19 Acc.) (0.58 R.R.)	Asph. Conc.=3.63 Mi.; Misc. Work=0.56 Mi.; (Acc. Rds.=3.19 Mi.; Asph. Conc.) (R.R. Track Relocation =0.58 Mi.); 2 Pre-cast Pre-stressed Conc. Twin Bridges Each 147.7' (3 Span) and 390.5' (6 Span; 2Pre-Cast Pre-Stressed Conc. Hy Sep. 246.7' (5 Span) and 293.6' (6 Span); 2 Weld. Plate Girder R.R. Seps. 375.7' (4 Span) and 213.2' (4 Span)	$280,000 Plans $10	$5,126,000
DISTRICT No. 8; Kurt G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Dutchess (Rte. 216)	FGRC 59-4	Putnam County Line-Stonehouse, S.H. 1163 Proj. SG-543(1)	0.40	Bit. Double Surface Treat. R.R. Sep. Comp. Built-Up Beam 90' (1 Span)	$9,500 Plans $5	$167,000
Orange	CH 60-1-56(1) CH 218-10-58(1)	East Orange County Residency Headquarters, Newburgh	0.16	Conc. Sidewalk and Curb	$330 Plans $5	$6,000
DISTRICT No. 9; Joseph C. Frederick, District Engineer, 71 Federick Street, Binghamton, New York						
Chenango & Delaware (Rte. 206)	FASSH 59-4 FASSH 59-5 FARC 59-2	Bainbridge-Masonville, Pt. 1B; Bainbridge-Masonville, Pt. 2; Sidney-Masonville, S.H. 1439 Proj. S-273(2); F-548(5)	0.63	Asph. Conc. Ty. 1A Comp. WF Beam Bridge 232.5' (3 Span); Pre-Cast Conc. Beam Bridge (25.5') (1 Span)	$90,000 Plans $5	$1,582,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Tour. Rte. 95)	FICBE 59-1	Interstate Route Connection 511, Cross Bronx Expressway (Harlem River to Jerome Ave.) Cont. 1G Proj. I-1084(41)	0.74	Demolition of Build.	$15,000 Plans $5	$270,000
Kings	FAPE 59-1	Prospect Expressway: Fort Hamilton Parkway Interchange (Greenwood Ave. to Beverly Rd.) Proj. U-1081(4)	0.54	9" Col. Cem. Conc. Pavt., 2 @ 37' Var. Wide=0.41 Mi.; Sheet Asph. Pave.=0.10 Mi.; Misc. Work=0.03 Mi.; 2 Hy. Seps. Comp. Steel Beams 135.5' (2 Span) and 130.1' (2 Span); 1 Hy. Sep. Weld. Plate Cont. Girder 196.5' (2 Span); 1 Ped. Overpass Weld. Thru. Plate Girder 212' (2 Span); Alterations to Subway Vents and Station	$340,000 Plans $10	$6,027,000
Nassau (Rte. 25D)	FAHHE 59-1	Horace Harding Expressway Extension (N.Y. City Line to Willis Ave.) Cont. No. 5 Proj. U-862(17)	4.31	Landscaping, Fencing and Misc. Work	$16,000 Plans $5	$313,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

Bids: February 24, 1959

Contract GWB-190.024

THE PORT OF NEW YORK AUTHORITY
GEORGE WASHINGTON BRIDGE
LOWER LEVEL EXPANSION
NEW JERSEY APPROACH
PHASE 3

Sealed proposals for the construction of an approach roadway system for the Lower Level Expansion of the George Washington Bridge between Hoyt Avenue and the Hudson River in the Borough of Fort Lee, New Jersey, together with the utilities therefor will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, February 24, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $100.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $100.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 22, 1959

Bids: February 15, 1959

Construction of Dez Dam in Iran
Prequalification Notice

Contractors wishing to participate in bidding on construction of a one hundred and ninety meter high thin arch dam and underground power station on the Dez River in Iran are requested to write to Development and Resources Corporation, 50 Broadway, New York 4, New York, U.S.A., for particulars required to qualify for participation in such bidding. Requests will be received up to February 15, 1959, so that final qualification statements may be completed by prospective contractors prior to May 1, 1959. The contractors invited to bid will be selected from the firms qualifying under the above procedure.

Bids: February 17, 1959

Contract NYA-950.002

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
ADDITIONAL ELECTRICAL CAPACITY
1959 PHASE

Sealed proposals for the installation of additional electrical feeders and alterations to the existing Central Sub-Station at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, February 17, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, January 22, 1959

OFFICIAL PROPOSALS

Bids: February 11, 1959.

Sewage Treatment Project
New Holland, Lancaster County, Pa.

Sealed Proposals for separate Contracts stated below will be received by THE NEW HOLLAND BOROUGH AUTHORITY at the Borough Office, 12 North Railroad Ave., New Holland, Pa. until 8:00 P.M., Eastern Standard Time, February 11, 1959, and will there be publicly opened and read shortly thereafter. Proposals will be for furnishing all necessary labor, materials, and equipment, and performing all work of the separate Contracts. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten (10) percent of the bid total, all in accordance with the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications, will be on file (for inspection purposes only) at the Borough Office. They may also be seen at the office of Gannett Fleming Corddry and Carpenter, Inc., Engineers, 600 North Second St., Harrisburg, Pa., from whom they may be obtained upon deposit of the following indicated amounts per set. Not more than two (2) sets of any particular Contract will be permitted a prospective bidder. Checks shall be made payable to Gannett Fleming Corddry and Carpenter, Inc.

Contract One
CONSTRUCTION OF EXTENSIONS TO EXISTING SEWERAGE SYSTEM $25.00

Contract Two
CONSTRUCTION OF ALTERATIONS AND ADDITIONS TO A SEWAGE TREATMENT PLANT
$30.00

Contract Three
ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF ALTERATIONS AND ADDITIONS TO A SEWAGE TREATMENT PLANT $20.00

Full refund will be made only to actual bidders on the Contracts stated above, for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calendar days after bid opening; refund for return of all other sets within the same period will be fifty (50) percent of deposit. No refund will be made for Contract Documents returned later than fifteen (15) calendar days after bid opening.

Gannett Fleming Corddry
and Carpenter, Inc., Engineers
THE NEW HOLLAND
BOROUGH AUTHORITY

Bids: February 3, 1959

Allegheny County, Penna.
County Department of Aviation

Pittsburgh, Pa., January 2nd, 1959.

Separate and sealed proposals will be received at the Office of the County Controller of Allegheny County, Room 104 Court House, Pittsburgh, Pa., until 10:30 o'clock A.M. Eastern Standard Time, TUESDAY, February 3rd, 1959, and will be opened and read by the County Commissioners in the Gold Room, Room 410 Court House, Pittsburgh, Pa., one-half hour later, 11:00 o'clock A.M. Eastern Standard Time, for the following:

CONTRACT NO. 8-J
GRADING & DRAINAGE OF EAST-WEST PARALLEL RUNWAY TAXIWAY "N" AND "Z", GRADING, DRAINAGE & PAVING OF RELOCATED MOON CLINTON ROAD—CONNECTING ROAD AND HANGAR SERVICE ROAD—
GREATER PITTSBURGH AIRPORT
CONTRACT NO. 8-L
CONSTRUCTION OF UNDERPASS AT INTERSECTION OF TAXIWAY "N" AND HANGAR SERVICE ROAD
GREATER PITTSBURGH AIRPORT

The minimum wage rates permissible on this project shall be in accordance with the schedule of minimum rates set up in the Contract Documents.

No Bidder may withdraw his bid for a period of sixty (60) days after the scheduled closing time for receipt of Bids.

Specifications, Form of Contract, Instructions to Bidders, Proposals and Blue Print Copies of Letting Plans may be viewed at the Office of the Commissioners of Allegheny County.

Copies of the above data for use of Bidders will be furnished upon application to the Contract Clerk, in the County Department of Works of Allegheny County, Room 502 County Office Building, Pittsburgh, Pa.

OFFICIAL PROPOSALS

A charge of $2.00 will be made for each set of Standard Contract Specifications.

A charge of $25.00 will be made for each set of Plans & Specifications for CONTRACT NO. 8-J.

A charge of $5.00 will be made for each set of Plans and Specifications for CONTRACT NO. 8-L.

There will be no refund on the Standard Contract Specifications or Plans and Specifications.

Check or Money Order to cover Specifications to be made out to the "COUNTY OF ALLEGHENY".

Proposals must be accompanied by a Certified Check or Surety Company Bond (on County's Form) to the order of/or running to the County of Allegheny for the amount fixed in the Instructions to Bidders as evidence that the Bidder will accept and carry out the conditions of the Contract in case of award.

The County Commissioners reserve the right to reject any and all Bids.

JAMES W. KNOX, CONTROLLER,
COUNTY OF ALLEGHENY.

Bids: February 5, 1959

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M., E.S.T. on February 5, 1959 by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 59-3 for the Construction of a Cofferdam to Seal Off the Apron at the North Span of Movable Dam No. 4 at Lock 8, Erie Canal, Town of Glenville, Schenectady County, New York
Engineer's Estimate for M 59-3 is $83,-000.00.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York
(b) Department of Public Works, 270 Broadway, New York City, New York
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract M 59-3 may be examined and obtained at the office of Mr. G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York.

The deposit for Plans and Proposal Forms for Contract M 59-3 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for M 59-3 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $4,-200.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5140) will be received at Ephrata, Washington, until 10 a.m. Pacific Standard Time, February 19, 1959, for furnishing labor and materials for the construction of Sand Hollow Pumping Plant and Discharge Line, Block 83, Columbia Basin Project, Washington. Location approximately 22 miles south of Quincy, Washington. Principal items are 4,350 cu. yds. excavation; 675 cu. yds. concrete; 700 lin. ft. furnishing and laying 66-inch dia. concrete pipe; 53,000 lbs. furnishing and erecting structural steel for pumping plant superstructure; installing 5 main pumping units; furnishing and installing other items of equipment and materials; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 368, Ephrata, Washington; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

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SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Wanted: Chief Estimator. Judicious Buyer. Graduate Civil Engineer. Proven Ability. Willing to assume responsibility. Salary and participation. Send Complete resume, salary expected. Executive Offices, Delaware Valley. P-9647, Engineering News-Record.

Estimator—General Contractor—Experienced Commercial, Industrial Buildings—Locate in Jacksonville, Florida—Send resume stating experience and salary requirements. P-9684, Engineering News-Record.

Estimator: General Construction. Must be accurate. Salary or may participate. Central Illinois. P-9685, Engineering News-Record.

Field Engineers. Recent architectural engineering graduates for a national trade association promoting masonry building materials in northeastern states. Salary to start $400.00 per month plus expenses. P-9668, Engineering News-Record.

Construction estimator-superintendent for specialized non-building general construction. Must be capable of taking complete charge of operation. Based in Phila. Salary and percentage. Write P-9546, Engineering News-Record.

Wanted: Concrete Paving Foreman. At least 5 years experience in highway or airport paving. Location—Ohio. P-9691, Engineering News-Record.

Experienced Asphalt Supt.—must know late model Cedarapids batch plant, be cost conscience and a good pusher—a good job for the right man. P-9754, Engineering News-Record.

Experienced Gravel Production Boss—must know dry-pit production and equipment and be able to prospect and produce to state specs. P-9761, Engineering News-Record.

Construction Engineer for water, sewer and highway work. Must have adequate education and experience to lay out and supervise construction of water and sewer and highway work in urban area. Send detailed resume of education and experience, date of availability and salary requirement to: Philip C. Cooper, Director of Dept. of Public Works, City of Salisbury, Salisbury, Md.

Civil Engineer—Registered professional engineer with experience in municipal street and sewer design. Beginning annual salary approximately $7075.00 with increase at the end of the first six months. Annual 5% increase each year for the next three years to a final annual salary after three and one half years of approximately $8410.00. Normal fringe benefits. Submit resume, and references to Director of Public Service, City of Middletown, Ohio, P. O. Box 530.

Chief Estimator: experienced in heavy and highway construction. Immediate and permanent position available with medium sized progressive organization located in middle West. P-9747, Engineering News-Record.

Estimator—Snuperintendent for concrete paving operations. Excellent opportunity for permanent position with aggressive, rapidly expanding organization. Must be capable of assuming complete responsibility. Salary and percentage. P-9746, Engineering News-Record.

Senior Civil Engineer (Airport Development) wanted by New York State Department of Commerce. Salary Range $7,500 to $9,090. Civil Service examination to be held March 14, 1959. Write to NYS Department of Civil Service, Albany 1, N. Y. before February 13 for detailed announcement and application forms.

Design Engineers: Graduate Civil Engineers to do detailed design work involving street paving, storm sewer and sanitary sewer projects. Sanitary Sewer projects to be given major emphasis. Application Should Be Made, Giving Minimum Salary, to Department of Personnel, Springfield, Missouri.

• POSITIONS VACANT

Civil Engineer Wanted By Western Illinois County, for survey, design, and construction of county highways, Under graduates with experience considered. Permanent with automatic advancement, paid vacation, sick leave, holidays, excellent retirement. State education, background, experience and salary desired. P-9712, Engineering News-Record.

Estimator-Engineer; Experienced in estimating of sewer and concrete foundations and structures; able to handle responsibility of Project Engineer. Position with expanding general and mechanical contracting firm in mid-Ohio Valley. Address reply to P. O. Box 406, Huntington 11, West Virginia.

• POSITIONS WANTED

Engineer—BSCE—35—Over 10 years experience in materials and soils, supervision of construction on dams, highways and tool roads. Prefers permanent position in Mid-west or West. PW-9619, Engineering News-Record.

Construction Executive. Wide experience in general contracting field as supt., construction manager. Proven record as a producer with top grade contractors. PW-9608, Engineering News-Record.

Construction Mgr. Proven capability. $15,000.00 minimum. Available immediately. PW-9618, Engineering News-Record.

Construction Supt. Top level only. Available immediately. PW-9613, Engineering News-Record.

Sales Engineer; B.S. Architectural Engn.— 3 yrs. structural steel detailing & estimating —3 yrs design, production & sales promotion of precast concrete products; seeks sales engineering position in south or west. PW-9602, Engineering News-Record.

Resident Engineer—Supervision of Construction large industrial projects. Presently employed overseas. Desires change of location 20 years overseas. Resume on request. Available January. PW-9577, Engineering News-Record.

Civil Engineer, 37, Graduate, Registered, 12 years one contractor all phases heavy construction, Chicago preferred, available. PW-9683, Engineering News-Record.

Civ. Eng., BCE, P. E., 30; 7 years experience highway and industrial fields. Desire responsible position New York State. PW-9671, Engineering News-Record.

Equipment Superintendent for all types of earthmoving equipment. Thoroughly experienced in preventive maintenance, purchasing and labor relations. Age 35 will relocate. Excellent references. PW-9678, Engineering News-Record.

Specifications Engineer for Public Works contracts, claims, reports, evaluations, liaison. Airports, seaports, highways, bridges, tunnels, buildings. P.E. 30 yrs. exp. PW-9672, Engineering News-Record.

Construction—Project Engineer. Exceptionally broad experience in most responsible capacities, both engineering and supervision, waterworks, sanitation, sub-aqueous, tunnel, bridge and heavy construction projects. Fully familiar modern construction methods and practices. Available April for responsible assignment field supervision construction. Registered. Age 58. PW-9692, Engineering News-Record.

Proj. Mgr., Const. Supt., Spec. Writer. 30 yrs. varied CE experience. PW-9644, Engineering News-Record.

Registered highway engineer, land surveyor, 30 years experience. Engineer or construction superintendent, highways, bridges, sewers. PW-9657, Engineering News-Record.

Equipment Superintendent: Seven foreign completed contracts. Available February. PW-9583, Engineering News-Record.

Engineer & Architects—Representative S.E. or S.W. Area. P.O. Box 53-296 Miami Shores, Fla.

B.C.E., 6 years with Consultant, municipal works; 3 years Construction Management with Gov't. & Contractor. PW-9705, Engineering News-Record.

CITY OF CINCINNATI
ROOM 260 CITY HALL

SANITARY ENGINEER—30-55 years. Graduate sanitary, civil or chemical engineer with 5 years experience in sewage, stream pollution or industrial waste; 3 years as supervisor. $8031—8830 yearly.

ELECTRICAL MAINTENANCE ENGINEER 25-55 years. Graduate electrical engineer with 2 years in maintenance, layout and design. $6434—7232 yearly.

WATER SUPPLY ELECTRICAL ENGINEER 25-50 years. Graduate electrical engineer with 3 years experience servicing high voltage electrical equipment. $7232—8031 yearly.

• POSITIONS WANTED

Construction Engineer 36, thirteen years experience with consultants and contractors as superintendent of construction and also project engineer. State Highways, Bridges, water and sewage works, and power plants. PW-9622, Engineering News-Record.

Superintendent-Estimator—Piping & Mechanical Specialist 18 Yeras Refinery, Powerhouse, Steel Mill, Etc. All Phases Estimate To Completion. Resume On Request. PW-9699, Engineering News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Project Manager Foreign Heavy Construction, Graduate Professional Engineer with extensive experience Latin America, available for long or short assignment or consultation. PW-9749, Engineering News-Record.

Const. supt. equip. supt. or gen. foreman. Road, drainage, water, sewer etc. PW-9758, Engineering News-Record.

Construction Manager, Architect-Engineers, Owners Representative. Age 47, P.E., 30 years experience all types of construction. Previous background Manager, Chief Engineer, General Superintendent, Chief estimator. Since 1955 have had responsible supervision and field management of thirty-million dollars worth of work. Now on East Coast. Will relocate. PW-9745, Engineering News-Record.

Draftsman—Low Salary. PW-9720, Engineering News-Record.

Foreign assignment reg. P.E. and L.S., ten years varied experience in field, estimating, consulting. Age 30. No bldgs. to date. Advise location and approx. salary. PW-9719, Engineering News-Record.

Latin America. Will you manufacture or market there? American BSME available knows government regulations, currency exchange, languages. Capable surveys, labor training, plant planning, installation, sales and management. All phases metal working, heavy and light machining. PW-9728, Engineering News-Record.

Engineer Estimator available for small progressive general contractors office. Will handle structural design. Estimating, purchasing, sub contracts. Personable, graduate, registered. Thoroughly experienced all phases of heavy industrial and commercial construction. PW-9716, Engineering News-Record.

General Supt. 40 years old. 18 yrs. as supt. last 8 yrs. as general supt. heavy, highway and airport construction. Qualified references. Available March 1st. PW-9709, Engineering News-Record.

Sanitary Engineer, B.S.C.E., P.E., 8 years experience. Resume on request. PW-9710, Engineering News-Record.

Project Manager or General Superintendent— Completing 3 million dollar pier at Grt. Lakes. 25 years experience, pile driving, cofferdams, caissons, piers, docks, underpinning, heavy concrete and timber work, underwater construction. Estimate, design, negotiate and supervise. Best of references. Foreign work preferred. PW-9708, Engineering News-Record.

Highway Engineer, B.S.C.E., M.E.T.E., P.E. Experience in design and planning, rural and urban freeways. Desire position with consultant or public agency West Coast. Resume upon request. PW-9706, Engineering News-Record.

Construction or Gen. Supt. 25 years experience in industrial, bridge, water and sewerage plant construction. Presently living in Ohio. Will relocate. Resume available. PW-9703, Engineering News-Record.

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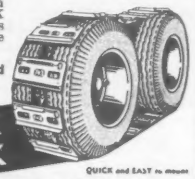

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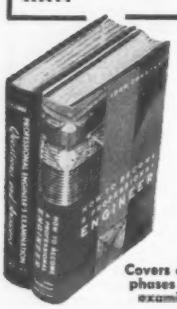

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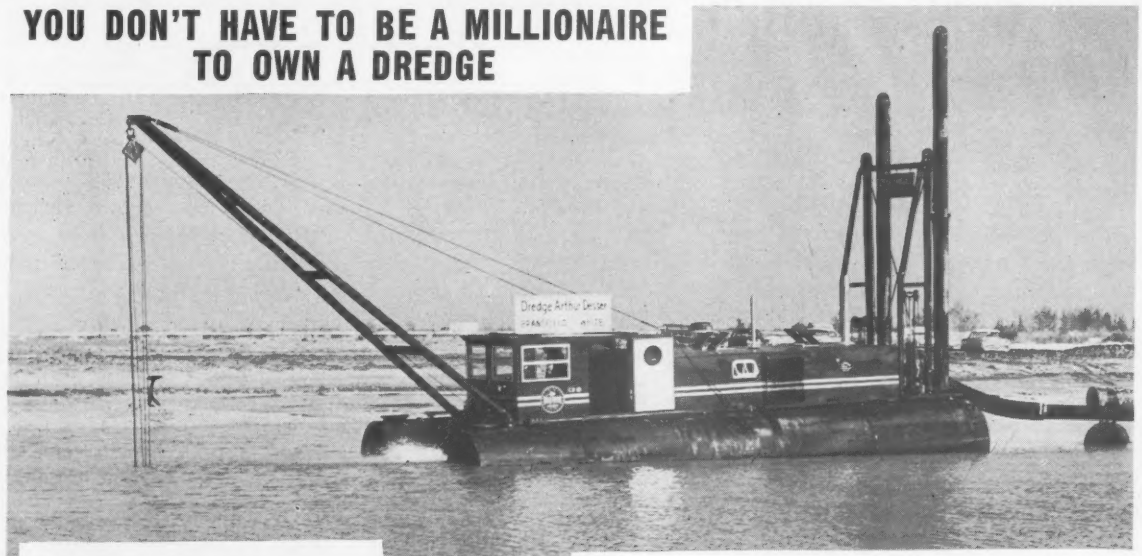

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Transportation: The Big Picture

When the Highway Research Board devotes an important part of its annual convention program to discussions of the whole transportation problem, the significance of the event should not be overlooked. Basically concerned with the science of improving the design and construction of highways, HRB must have been impelled by a considerable force to "waste time" on other matters.

And indeed the force involved was a worthy one, for it reflected the realization that the highway can't do the nation's whole transportation job. Also, that unless the highway is a part of an efficient over-all transportation system, it can't be efficient itself.

This recognition of the "big picture" in transportation by the highly respected and scientifically inclined Highway Research Board is a good omen. It should give encouragement to those who have been plugging for a national transportation policy that will recognize the needs and interdependence of all forms of transportation.

Among those who see this as a necessary crusade are the Committee for Economic Development, Engineers Joint Council, a U.S. Senate subcommittee and, most recently, the National Academy of Sciences-National Research Council, which now has study plans under way.

As a part of this latter body, the Highway Research Board is in a good position to make valuable contributions. And in this connection a most intriguing suggestion was made by Wilfred Owen of the Brookings Institution, one of the speakers at the convention. Mr. Owen recommended that two new research boards be organized, one on transportation research and one on urban research. Certainly the latter, if it would undertake to relate transportation to urban growth, could bring some needed facts to light on the relative place of highways and rail rapid transit in future city development—one of the most important aspects of transportation's big picture.

In any event, what is to be noted in all this activity is a growing awareness that the highway problem, the railway problem, the airway problem and even the waterway problem are inter-related and interdependent; they must be solved together and not separately. And transportation policy is needed as a specification for the solution. The Highway Research Board and the NAS-NRC are welcome additions to the organizations lending their talents to the formulation of such a policy.

Industrial Building: The Awaited Upturn

Industrial building construction is coming back. That was the big news in last week's issue (ENR Jan. 15, p. 21). And good news it is after a 30-month slump in one of the biggest categories of construction.

The industrial plants won't be going to contract in great volume just yet. But it won't be long. They are back on the drawing boards, and have been since October. ENR's Business News Department estimates the effect in 1959 will be to boost industrial building construction 5% over its 1958 volume—to $1.9 billion. Then in 1960, industrial building should go up 20%—to $2.1 billion (on projects costing $110,000 or more).

The last big upswing in industrial construction—factories, warehouses, steam powerhouses, refineries, etc.—hit an all-time high in 1956. The manufacturing industries and utilities needed capacity badly, and they built it—letting contracts to the tune of over $5 billion in that one year. Their needs mostly met, they cut their contracting for plant nearly in half in 1957. And, of course, 1958's recession depressed industrial building even more.

Today, with the nation's industrial plant still running well below capacity, how can ENR see an upturn coming? The solid reason is in our figures, which reveal a large and growing industrial building backlog. But there are other favorable factors. Corporate earnings are up, encouraging spending deferred all through the recession. Spending on modernization is a must: spending on new plants to replace obsolescent plants, on plants in better locations to tap new markets, on plants of new design for new products. The McGraw-Hill Plan '59 Study of Modernization (ENR Nov. 6, 1958, p. 62) revealed that $95 billion should be spent to replace U.S. industry's obsolete plant and equipment.

Yes, industrial building will rebound, but that is not to say it will become a trouble-free category of construction. Its big fluctuations are too big for its own good. It seems to expand all at once, and when it does it causes inflation of construction prices from which it then suffers. There seems no way to bring steadier spending for construction by industry. It's a rare builder who can sell his services to a manufacturer in a period when that manufacturer's orders and earnings are not telling him to buy construction.

Fortunately for construction as a whole, public works can more than make up for a slump in industrial construction—as it did during the 1958 recession. But this doesn't help the specialist in industrial construction much, unless he can diversify, as ENR studies of how to do business in a recession showed.

It is good news then, for industrial builders in particular and for construction in general, that industrial building—so badly off last year—will soon be rebounding toward the $2-billion-a-year mark.